Usenet Newsgroup Archive: rec.radio.amateur.homebrew

1993

These Usenet messages were preserved as a plain-text archive. This PDF was generated by Digital Library of Amateur Radio & Communications from the source text file in 2026.

Date span: 1993-06-22 through 1993-12-31

Source text: rec.radio.amateur.homebrew.txt

Source item: https://archive.org/details/usenet-rec

Messages included in this PDF: 1,223

Message records with no readable body available in the source text: 2

Messages are presented chronologically by archived date.

Binary or encoded payloads are not printed as blocks of encoded text; a placeholder appears where such material was detected. The original source text is unchanged.

1. ARCO variable capacitor specs or address

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 13:35:27 UTC
From: kitagawa@thyme.laser.ee.osaka-u.ac.jp
Message-ID: <KITAGAWA.93Jun22223527@thyme.laser.ee.osaka-u.ac.jp>
Source record: 120129

Congratulations homebrew lover's newsgroup!

Should anyone know the specifications {Cmin, Cmax, Vmax} of ARCO 365
variable capacitor or postal address of ARCO, please tell me. This is
actually my second post on the subject but I desperately need the info.
Thanks in advance.

masa

QRZ? de JH3PRR
Masahiro Kitagawa <kitagawa@ee.es.osaka-u.ac.jp>
Electrical Engineering, Engineering Science, Osaka University

2. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 15:03:11 UTC
From: jim@n5ial.mythical.com
Message-ID: <1993Jun22.150311.4571@n5ial.mythical.com>
Source record: 120125

Yet another opportunity to say it....YES! The new group is finally here!!!

In article <1993Jun21.174634.181093@locus.com> dana@lando.la.locus.com (Dana H. Myers) writes:

>Hey, anyone here ever experiment with power MOSFETs as RF amplifiers?

>I've built a number of circuits, using IRF511, IRF530 and MTP3055E
>FETs. The IRF511 seems have the best HF response, remaining strong
>beyond 30Mhz, but the MTP3055E is very good, and capable of higher
>power output.

The only one from that list that I've used was the IRF511. In that particular PA, if memory serves, the 511 was driven by an MPF102. Power output was about 15 watts. The only thing I didn't like was the fact that the IRF511 seemed very ready to eat itself when faced with even a marginally bad impedance mis-match...of course, by the time that happened, I was using one that I'd gotten from Radio Shaft, so that could very well have been the actual problem. :-) This transmitter never had a stable VFO, and therefore never really got off the ground. There were also some other problems (read on)....

Another homebrew project I've done was intended as a QRP transmitter, and was only designed to put out a couple of watts. It used the 2N3053 as the primary PA. In fact, I eventually fed this transmitter into the PA from the other project (since its VFO was never stable, and this newer one was *VERY* stable) into the PA above.

One other thing worth mentioning about the IRF511 is its output. Granted, the filtering and design of the transmitter has just as much to do with this, but I found the output of the above setup (2N3053-based transmitter into PA using IRF511) to have very clean output when checked on the spectrum analyzer portion of a service monitor. The second harmonic was, if I remember (again, all of my notes are buried somewhere) something like 45 dB below the fundamental. The third harmonic and beyond were more or less not there.

Of course, the original transmitter project (with the unstable VFO) had absolutely *HORRIBLE* harmonics when checked on a spectrum analyzer. I seem to recall that the second harmonic was about 25 dB *ABOVE* the fundamental. :-) Yes, that was one sick VFO.

Gee, all this talk about homebrew transmitter projects is making me want to get back to work on a small, portable 30m transmitter/receiver pair. Anyone got a spare spectrum analyzer they want to give away? :-) Anyone know where I can find one for << $100? (yeah, I know...dream on, right?)

--jim

--
#include <std_disclaimer.h> 73 DE N5IAL (/4)

INTERNET: jim@n5ial.mythical.com | j.graham@ieee.org ICBM: 30.23N 86.32W
AMATEUR RADIO: (packet station temporarily offline) AMTOR SELCAL: NIAL

E-mail me for information about KAMterm (host mode for Kantronics TNCs).

3. 10 GHz (and other microwave) homebrew projects?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 15:20:48 UTC
From: jim@n5ial.mythical.com
Message-ID: <1993Jun22.152048.4679@n5ial.mythical.com>
Source record: 120126

Now that we've got a group for homebrew, I think it's time to start digging up some of those old projects (that have been on the shelf due to lack of a good place to get suggestions, help, etc.). :-)

One of these projects that never really got started is getting up on 10 GHz. I'd eventually like to get up on 10 GHz, or for that matter, any of the microwave bands. I'm more interested in the experimental aspects than anything, so I'm not looking for cookie-cutter type designs...but I don't have any design experience in that area (except link design), so I might have to start small.

Also, I have almost zero money to spend on this, so a project that costs $50 is expensive.... A friend of mine, Mike, KA5WOT (who, if I hadn't moved, would have been the one to get me going on this), has told me that it is at least possible to get a complete setup (both ends, I think) for less than that...if you dig in the right places. Suggestions in this area are *MORE THAN WELCOME*.

I guess at first, just to get my feet wet, I'd want to start simple with something like wideband FM, and then perhaps try to get something stable enough for SSB operation. I suppose, for a while, any experimenting I'd be doing would be more in the antenna and link design area, with the transceiver just being a tool for that purpose. Then perhaps later on, I can graduate to a new level. :-)

If I remember correctly, there are some motion detectors that operate close enough to 10 GHz to be able to re-tune them. Does anyone know what all is involved in doing this? What additional hardware will I then need (for the transmitter itself...I know about the dish <grin>)? I'd like to use either my 2m FM rig (except that's narrowband FM, isn't it?) or my HF rig's 10m section if possible (to help control costs). What types of motion detectors work? How much can one expect to pay for them?

Also, I'm assuming I need to find someone with a good service monitor, so I can use the spectrum analyzer and the freq. counter, but that's a local issue that can probably be solved.

Basically, I'm looking for suggestions on getting started. I do know about the articles in QST recently, but those were *WAY* out of my budget, and if I remember correctly, they were a much more complex design than I'd want to start with.

Have I rambled on enough to confuse the h*ll out of everyone? Or did I give you at least a distorted picture of what I'm interested in doing?

Thanks,
--jim

```
--
#include <std_disclaimer.h> 73 DE N5IAL (/4)
-------------------------------------------------------------------------------
INTERNET: jim@n5ial.mythical.com | j.graham@ieee.org ICBM: 30.23N 86.32W
AMATEUR RADIO: (packet station temporarily offline) AMTOR SELCAL: NIAL
-------------------------------------------------------------------------------
E-mail me for information about KAMterm (host mode for Kantronics TNCs).
```

4. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 15:39:22 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jun22.153922.195119@locus.com>
Source record: 120118

In article <C900AK.n1q@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>
>A large input capacitance is hard to match to on the higher HF
>frequencies. Especially as it tends to be non-linear with voltage.
>I think the optimum part would have the lowest Cg-d for the
>required on-resistance and current rating.
>

Yup. The input capacitance is always non-linear with respect
to voltage, both the gate voltage and the drain voltage. Motorola
literature documents this quite well (Motorola Power MOSFET Transistor
Data Book). I normally use the total Q figure for the gate and
convert it to an equivalent capacitance for matching purposes. I've
never been horribly successful at getting a low SWR match to a FET,
though.

Dana

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

5. Wanted: Plans for Dual Band Vent Antenna

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 16:02:22 UTC
From: lawrence@combdyn.com
Message-ID: <1993Jun22.160222.12788@combdyn.com>
Source record: 120127
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew

I'm looking for plans for constructing a dual band Vent Antenna. I read
a few years ago about these kinds of things being available on the market.

Well, I'm missing a vent pipe on the side of the house, and rain water likes
coming through the hole. So, I got thing thinking about disguising an external
antenna and putting in a pipe at the same time.

I want something that work for both 2m and 70cm. I'm more interested in
work 2m for packet and the local repeater, but I have a dual band rig and
someday we'll have a UHF repeater.

--
--EMAIL----------------------------PHONE-----------FAX------------
| WORK: lawrence@combdyn.com | (403)529-2162 | (403)529-2516 | CallSign
| HOME: dreamer@lhaven.uumh.ab.ca | (403)526-6019 | (403)529-5102 | VE6LKC
----
disclamer = (working_for && !representing) + (Combustion Dynamics Ltd.);

6. FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 17:37:28 UTC
From: mark@beagle.Eng.Sun.COM
Message-ID: <m2egqoINNgj@exodus.Eng.Sun.COM>
Source record: 120119

Would someone be able to tell me what the current FCC regulations are on unlicensed, homebrew transmitters? I am interested in the maximum allowed power output and approximate range of frequencies. Thanks.

Mark Balch

7. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 19:49:39 UTC
From: rwiley@magnus.acs.ohio-state.edu
Message-ID: <207noj$nei@charm.magnus.acs.ohio-state.edu>
Source record: 120120

In article <m2egqoINNgj@exodus.Eng.Sun.COM> mark@beagle.Eng.Sun.COM writes:
>Would someone be able to tell me what the current FCC regulations are on
>unlicensed, homebrew transmitters? I am interested in the maximum allowed
>power output and approximate range of frequencies. Thanks.
>
>Mark Balch
>
From what my notes say, it depends how you define 'unlicensed'. If your
talking operating illegally on bands not permitted to the operator, then 1
milliwatt is too much. If you're licensed for amateur radio operation, then
the guidelines one normally operates by apply (ie. Novice class operators use
no more than 200 watts in most areas).

73 de Bob, N8MMR
--
=-=
=-= Bob Wiley, N8MMR Internet: rwiley@magnus.acs.ohio-state.edu =-=
=-= P.O. Box 3164 Amateur Radio Packet: N8MMR@W8CQK.OH.USA.NA =-=
=-= Columbus, Ohio 43210 =-=

8. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 20:50:03 UTC
From: jsteinhu@nyx.cs.du.edu
Message-ID: <1993Jun22.205003.14257@mnemosyne.cs.du.edu>
Source record: 120121

In article <207noj$nei@charm.magnus.acs.ohio-state.edu> rwiley@magnus.acs.ohio-state.edu (Robert H Wiley) writes:
>In article <m2egqoINNgj@exodus.Eng.Sun.COM> mark@beagle.Eng.Sun.COM writes:
>>Would someone be able to tell me what the current FCC regulations are on
>>unlicensed, homebrew transmitters? I am interested in the maximum allowed
>>power output and approximate range of frequencies. Thanks.
>>
>>Mark Balch
>>
>From what my notes say, it depends how you define 'unlicensed'. If your
>talking operating illegally on bands not permitted to the operator, then 1
>milliwatt is too much. If you're licensed for amateur radio operation, then
>the guidelines one normally operates by apply (ie. Novice class operators use
>no more than 200 watts in most areas).
>
> 73 de Bob, N8MMR
I belive he was asking for information along the lines of 29Mhz typ
devices. However can't say I know anything about that.. :)

--
jsteinhu@nyx.cs.du.edu

9. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-22 22:22:54 UTC
From: perry@fc.hp.com
Message-ID: <C91nI7.L5y@fc.hp.com>
Source record: 120122

: >The biggest drawback is a high gate capacity, but it could be
: >neutralized.

: Well, it can, but there are limits to how well you can do this.
: One approach I intend to try, someday, is to use a high speed FET
: driver chip to very rapidly switch the FET and avoid input mismatch.
: This approach should yield good class D/E operation at frequencies
: below 14 Mhz.

Don't know if we're thinking the same thing, but I've considered using a (fast) pulse width modulator. The pulse width is proportional to input signal amplitude. In the extreme, maybe you could get by with just two pulses per cycle and let a high-Q filter smooth things out.

Sweep tubes (remember those?) in GG also have horrible input capacity that changes with input power. The approach there was to put swamping capacitor in parallel with the input and tune it. Then, reduce the Q back to a reasonable level with a loading resistor.

Perry

10. cheap, stable and easy to loose

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 02:58:30 UTC
From: esj@harvee.billerica.ma.us
Message-ID: <H.eg.l6hHVYnOvaE@harvee.billerica.ma.us>
Source record: 120124

does anyone have any plans or ideas for cheap transmitters for T hunting?
I'm looking for simple to build, stable TX's that can be lost without
a second thought. Hence the subject: cheap, stable and easy to loose!

Thanks!

--- eric
--
HOME: esj@harvee.billerica.ma.us HAM ka1eec
WORK: 617.630.4687 (w) esj@ruby.polaroid.com
source of the public's fear of the unknown since 1956

11. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 03:03:00 UTC
From: v111qheg@ubvms.cc.buffalo.edu
Message-ID: <C920DM.J6K@acsu.buffalo.edu>
Source record: 120123

In article <m2egqoINNgj@exodus.Eng.Sun.COM>, mark@beagle.Eng.Sun.COM writes...
>Would someone be able to tell me what the current FCC regulations are on
>unlicensed, homebrew transmitters? I am interested in the maximum allowed
>power output and approximate range of frequencies. Thanks.
>
>Mark Balch

The max legal limit for licenced hams is 1.5 kilowatts. HOVEVER, the
equipment must have at least -45 dB (preferably -60 db) signal levels
outside the desired pass band. I.E., if your homebrew kilowatt
transciever is running at 14.163 MHZ, all other signals must be attenuated
by 60 decibels at the input stage of the finals. Obviously, If your
building an amplifier this doesnt apply since amplifiers are by nature
broad banded and your transciever has the necessary filters.

Write the FCC for their most current rules if the project your working on
is not amateur related as rules for mobile service etc are much
different. 73,

Peter Vasilion, KB2NMV aka KPB-622, Empire 837
Western NY DX Assoc. Vice President.
v111qheg@ubvms.cc.buffalo.edu
KB2NMV@KE2VW.#WNY.NY.USA.NA

12. Translation loop VFOs

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 08:42:16 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <209518$ogv@cc.tut.fi>
Source record: 120128

While it is relatively easy to build simple QRP rigs for
the lower HF-range by using a free-running VFO, this method
is not usable for upper-HF/VHF/UHF due to poor stability.

The standard method for for the upper-HF is to add a fixed
crystal-controlled signal to the VFO signal. Due to output
filtering requirements the VFO frequency should be more
than 10 percent of the output frequency. For 2 m/ 70 cm
systems 15 MHz/45 MHz VFOs would be required and the stability
would be poor.

The translation loop seems to be an interesting alternative
in wich the output frequency is generated by a VCO which is
also mixed down by a crystal-controlled signal to a few MHz
and compared with the VFO-signal (in the lower-HF range) in
a phase comparator. The error voltage from the phase comparator
is applied to the VCO control input after a low-pass filtering.

The only design I have seen is in the VHF/UHF manual (by RSGB)
where one megahertz of the 2 m band was controlled by a VFO
tunable between 1.0 - 2.0 MHz. This old design is quite complex
as mostly discrete components are used.

With modern components it should be easier to design simpler
translation loop PLLs but I haven't seen any. Are there any
severe drawbacks in the translation loop principle or is the
true QRP spirit limited only to the lower HF-range ?

The MC3362 looks interesting, one idea was to use an external
48 MHz xtal oscillator/tripler and feed it (144 MHz) into the
RF-input while the VCO oscillates in the 2 m band. The 2nd
oscillator 2nd mixer could be the VFO/phase detector. The
satellite subband (145.8-146) could be controlled by a VFO
running 1.8 - 2.0 MHz. Would this be feasible ?

Paul OH3LWR

Phone : +358-31-133 657
X.400 : G=Paul S=Keinanen O=Elisa-Tampere A=ELISA C=FI
Internet: Paul.Keinanen@Telebox.tele.fi
Telex : 58-100 1825 (ATTN: Keinanen Paul)
Mail : Hameenpuisto 42 A 26
SF-33200 TAMPERE
FINLAND

13. Re: 10 GHz (and other microwave) homebrew projects?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 11:44:30 UTC
From: dejongh@dutiws.twi.tudelft.nl
Message-ID: <C92oM6.AGF@dutiws.twi.tudelft.nl>
Source record: 120131

In article <1993Jun22.152048.4679@n5ial.mythical.com> jim@n5ial.mythical.com (Jim Graham) writes:
>Now that we've got a group for homebrew, I think it's time to start digging
>up some of those old projects (that have been on the shelf due to lack of
>a good place to get suggestions, help, etc.). :-)
>
>

Here in Europe one of the most easy to go projects is the DB6NT-transverter.
It's a state of the art project with utterly good results. However, $50.....?
In combination with the G4DDK-LO (2556 MHz) you have 10 mW output on 10 GHz
which is sufficient enough to drive a 'moderate' TWT to full output.
The DB6NT project is published in DUBUS (the German 'bible' for microwave
projects, published quarterly) and the LO was published in (I thought) RadCom
(the RSGB journal).

Enjoy, Remco (PA3FYM, besten@chem.ruu.nl)

14. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 13:47:32 UTC
From: tjf@beta.lanl.gov
Message-ID: <1993Jun23.134732.18268@newshost.lanl.gov>
Source record: 120130

There are also a class of devices for use in the FM Broadcast Band
for "unlicensed" use. The "Mr. Microphone" devices may be what the
original poster had in mind. I built a kit for my son that put out
~0.25 W or so from a single-transistor transmitter, using a slug-tuned
coil for operation from about 95-105 Mhz FM. I estimated the range
at about 1000ft for our FM receiver. I'm not sure of the max power
level allowed, but 1 transistor circuit with NO power amp won't put out
much....

Tom
KJ5LT

15. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 14:52:25 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jun23.145225.114163@locus.com>
Source record: 120134

In article <1993Jun22.205003.14257@mnemosyne.cs.du.edu> jsteinhu@nyx.cs.du.edu (Josh Steinhurst) writes:
>In article <207noj$nei@charm.magnus.acs.ohio-state.edu> rwiley@magnus.acs.ohio-state.edu (Robert H Wiley) writes:
>>In article <m2egqoINNgj@exodus.Eng.Sun.COM> mark@beagle.Eng.Sun.COM writes:
>>>Would someone be able to tell me what the current FCC regulations are on
>>>unlicensed, homebrew transmitters? I am interested in the maximum allowed
>>>power output and approximate range of frequencies. Thanks.
>>>
>>>Mark Balch
>>>
>>From what my notes say, it depends how you define 'unlicensed'. If your
>>talking operating illegally on bands not permitted to the operator, then 1
>>milliwatt is too much. If you're licensed for amateur radio operation, then
>>the guidelines one normally operates by apply (ie. Novice class operators use
>>no more than 200 watts in most areas).
>>
>> 73 de Bob, N8MMR
> I belive he was asking for information along the lines of 29Mhz typ
>devices. However can't say I know anything about that.. :)
>
>
>--
>jsteinhu@nyx.cs.du.edu
>

There are a number of radio services which allow the use of homebrew equipment and do not require a license. The 160-190 KHz band allows the use of up to 1W and an antenna and feedline not exceeding 50feet. Most folks locate the transmitter at the antenna. Transmitters are permitted in the 530 - 1700 KHz band, with a maximum input power of 100mW and a maximum antenna length of 9 feet. You may build a 100mW transmitter in the 49MHz band. You may also build a low power transmitter in the 88-108 MHz broadcast band, it is limited by the amount of radiated signal...

For more information, refer to Book 47 of the Code of Federal Regulations, starting with Part 15. You should be able to find this in your local library.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

16. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 15:02:10 UTC
From: jfw@ksr.com
Message-ID: <28426@ksr.com>
Source record: 120132

mark@beagle.Eng.Sun.COM (Mark Balch) writes:
>Would someone be able to tell me what the current FCC regulations are on
>unlicensed, homebrew transmitters? I am interested in the maximum allowed
>power output and approximate range of frequencies. Thanks.

Part 15, the part of the FCC regulations concerning unlicensed devices,
specifies a whole bunch of different output powers for various frequency
ranges; could you be more specific as to your purpose and rough frequency
range?

If you want to try long-range communications, and don't want to go to the
effort of obtaining a ham radio license, the "Lowfer" band may be what you
want: 160-190KHz (yes, kilohertz), 1W maximum input power, maximum length
of antenna *plus* feedline is 50 feet, spurious emissions outside the band
must be 60dB or more below the signal strength at the carrier frequency.
AM voice and CW, and possibly other modulation methods (no one had a definitive
answer the last time this came up). The antenna restriction makes the
transmitter hideously inefficient, but with highly advanced modulation schemes
(like incredibly low-bandwidth synchronous CW) the range can be over 1000
miles. No license of any kind is required as long as you stick to the above
restrictions.

17. Re: 10 GHz (and other microwave) homebrew projects?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 15:08:12 UTC
From: glenne@sr.hp.com
Message-ID: <C92y1p.E2C@srgenprp.sr.hp.com>
Source record: 120133

Jim Graham (jim@n5ial.mythical.com) wrote:

: One of these projects that never really got started is getting up on 10 GHz.

: less than that...if you dig in the right places. Suggestions in this area
: are *MORE THAN WELCOME*.

: Basically, I'm looking for suggestions on getting started. I do know about
: the articles in QST recently, but those were *WAY* out of my budget, and if

jim
You might be interested in looking at the 3 part series on microwave station design in Feb/June/Oct 1988 Ham Radio Magazine or the digital link in Dec 1989 HR Mag and also in 1991 onward ARRL Handbook. The series is primarily aimed at narrowband (SSB, multimode etc) but is relatively inexpensive and can be done in stages. It offers the additional advantage of getting you to all of the amateur bands from 1296 through 10GHz with only incremental work for each additional band. It can initially be run wideband as well.

73
Glenn Elmore n6gn

18. Re: cheap, stable and easy to loose

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 16:32:28 UTC
From: David DiCarlo <r14793@waccvm.sps.mot.com>
Message-ID: <1993Jun23.163228.17182@newsgate.sps.mot.com>
Source record: 120135

In article <H.eg.l6hHVYnOvaE@harvee.billerica.ma.us> Eric S Johansson, esj@harvee.billerica.ma.us writes:
>a second thought. Hence the subject: cheap, stable and easy to loose!

I posted this in rec.radio.amateur.misc before I found out that this group existed. I think it might be more appropriate here, and somewhat of an answer to the previous post:

Motorola makes narrow band FM receiver and transmitter chips for the cordless telephone market, but are usable up to 450 MHz. (MC3362/3363 dual conversion FM receiver, MC2831A transmitter) The chips have built in varactor diodes and would readily lend themselves to very low power and very small synthesized FM ham transceiver applications with low parts count. The application notes which show some schematics for crystal controlled, free running oscillator and 10 and 265 channel synthesized applications.

My question is: have these chips been used in any construction articles where a pc board layout would have been provided? I don't subscribe to any ham publications at the moment, and have not for some time. Please post or email me any references you may have in regards to these chips

Thanks,
Dave DiCarlo
r14793@waccvm.sps.mot.com (internet)

19. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 18:01:21 UTC
From: mark@beagle.Eng.Sun.COM
Message-ID: <m2h6jhINNgj@exodus.Eng.Sun.COM>
Source record: 120138

What I was referring to was if there were any frequency ranges where a completely unlicensed, any joe-schmoe could legally construct a transmitter. And if so, what would be the legal limits on that transmitter's power output?

// Speaking for me, not Sun....

20. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 18:29:01 UTC
From: markz@ssc.com
Message-ID: <1993Jun23.182901.5719@ssc.com>
Source record: 120142

Mark Balch (mark@beagle.Eng.Sun.COM) wrote:
: Would someone be able to tell me what the current FCC regulations are on
: unlicensed, homebrew transmitters? I am interested in the maximum allowed
: power output and approximate range of frequencies. Thanks.

[Boy, what a bunch of trash answers.]

The unlicensed transmitters are covered in part 15, subpart C of the
FCC regulations, unlike ham radio which is part 97.

In my 1991 copy of the regulations there are 18 different categories
of service, covering 8 pages or so. Paragraphs are 15.217 thru 15.251.

A whole whale of a lot of fine print, so here are some high points.

15.217 (The Lowfer Band) 160-190 kHz. 1 Watt of input power with a
15 meter antenna/ground system.
15.219 (Am broadcast band) 510-1705 kHz. 100 milliwatts of input power
with a 3 meter antenna/ground system.
15.225 13.56 MHz. (An Industrial/Scientific/Medical band) 10000
microvolts/meter at 30 meters. (Somewhere between 1 an 10 milliwatts
as I figure it, depending on your antenna.)
15.227 26.96-27.28 MHz (CB) 10000 microvolts/meter at 3 meters.
15.235 49.82-49.9 MHz (baby monitors, walkie talkies, etc) For home
built, 100 milliwatts total project input power with a fixed 1 meter
antenna. Or 10000 uV/M at 3M.
15.239 88-108 MHz (FM broadcast) 250 uV/M at 3 M. a couple of nanowatts,
good for 100 feet or so if you're lucky.
15.247 902-928, 2400-2483.5, 5725-5850 MHz. 1 Watt with power reduction
if the transmit antenna gain is greater than 6 dBi. Must be
Spread Spectrum, either hopping or direct sequence. (Wireless Lans,
the Tropez cordless phone.)
15.249 902-928, 2400-2483.5, 5725-5875 MHz,24-24.25 GHz. 50 millivolts/meter
at 3 meters (or 250 mV/M for 24 GHz.) (What you can do on the
same bands as .247 without spread spectrum.)

Mark Zenier markz@ssc.wa.com markz@ssc.com

21. Re: 10 GHz (and other microwave) homebrew project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 18:59:30 UTC
From: craigs@dseg.ti.com
Message-ID: <1993Jun23.185930.22119@mksol.dseg.ti.com>
Source record: 120136

You can get on 10GHz WBFM relatively easy and cheaply. Key is finding the 10GHz gunnplexer unit. Best of these are the Solfan motion detectors. I've found these at flea markets for less than $5. If you make a friend at one of the security companies, you can probably get them for less :).

These devices have a gunn diode and a mixer diode mounted in the unit. The gunn diode can be driven with about 7 volts. Build a simple 7 volt supply and modulate this with mike audio. The gunn diode will FM!

For receive, we've been using a 30 MHz I.F. unit of two different flavors. One is a radio shack Flavoradio modified for 30 MHz and wideband. The mod appeared in the 1991 Microwave Update proceedings (I think it's 91), and I can send you a photocopy if you'd like. These flavoradios can be had for about $14 when on sale at Radio Shack. I've picked them up for as little as $3 at flea markets here in Dallas.

The other I.F. unit we've been using is the Ramsey 10 meter receiver kit. It's a bit more expensive than the flavoradio ($29?) but it makes for a better unit. There is a simple mod to this kit to make it wide band.

With the 30 MHz I.F. unit attached to the mixer diode, you will now receive a signal 30 MHz off of the xmit frequency. The gunnplexer can be retuned to the ham band. It\ is quite touchy and you'll probably want to borrow the services of someone's spectrum analyzer. Also, the gunn unit drifts like crazy and is quite temperature sensitive. We tuned a few up in January and used them in the January contest, but couldn't find each other in June!!!! Oh, Well.

-Craig

Craig S. Young Email: craigs@lobby.ti.com
Texas Instruments Incorporated Phone: (214) 952-4616
2501 W. University
McKinney, TX 75070 "I speak only for me, not TI"
---

22. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 19:25:35 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jun23.192535.118445@locus.com>
Source record: 120137

In article <C91nI7.L5y@fc.hp.com> perry@fc.hp.com (Perry Scott) writes:
>: >The biggest drawback is a high gate capacity, but it could be
>: >neutralized.
>
>: Well, it can, but there are limits to how well you can do this.
>: One approach I intend to try, someday, is to use a high speed FET
>: driver chip to very rapidly switch the FET and avoid input mismatch.
>: This approach should yield good class D/E operation at frequencies
>: below 14 Mhz.
>
>Don't know if we're thinking the same thing, but I've considered using
>a (fast) pulse width modulator. The pulse width is proportional to
>input signal amplitude. In the extreme, maybe you could get by with
>just two pulses per cycle and let a high-Q filter smooth things out.

We're thinking the same thing. Actually, only one pulse per cycle
is required, the same as class-C. Yes, you do need a good LPF on the
amplifier output, but it isn't significantly different than conventional
class-C. I don't see what is extreme about this.

>Sweep tubes (remember those?) in GG also have horrible input capacity
>that changes with input power. The approach there was to put swamping
>capacitor in parallel with the input and tune it. Then, reduce the Q
>back to a reasonable level with a loading resistor.

Yup, this technique is one that applies to bipolar and MOS RF power
transistors.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

23. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 22:14:49 UTC
From: hale@btree.uucp
Message-ID: <1993Jun23.221449.6686@btree.uucp>
Source record: 120139

In article <C920DM.J6K@acsu.buffalo.edu> v111qheg@ubvms.cc.buffalo.edu (P.VASILION) writes:
>The max legal limit for licenced hams is 1.5 kilowatts. HOVEVER, the
>equipment must have at least -45 dB (preferably -60 db) signal levels
>outside the desired pass band. I.E., if your homebrew kilowatt
>transciever is running at 14.163 MHZ, all other signals must be attenuated
>by 60 decibels at the input stage of the finals.

OK, I am confused. Are you saying that the FCC rules apply to the interior of the equipment, and not to what gets radiated from the system? Or are you ignoring gain compression?

> Obviously, If your
>building an amplifier this doesnt apply since amplifiers are by nature
>broad banded and your transciever has the necessary filters.

Some amplifiers are broad band but this just means that the amplifier is more likely to generate undesired outputs such as the 2nd and 3rd harmonic. Appropriate filtering in the output circuit is usually advisable.

Bob Hale ...!ucsd!btree!hale
...!hale@brooktree.com (preferred)

24. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 22:37:50 UTC
From: perry@fc.hp.com
Message-ID: <C93Iv2.24F@fc.hp.com>
Source record: 120140

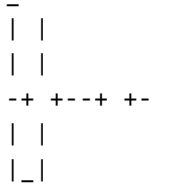
Dana H. Myers (dana@lando.la.locus.com) wrote:
: >Don't know if we're thinking the same thing, but I've considered using
: >a (fast) pulse width modulator. The pulse width is proportional to
: >input signal amplitude. In the extreme, maybe you could get by with
: >just two pulses per cycle and let a high-Q filter smooth things out.

: We're thinking the same thing. Actually, only one pulse per cycle
: is required, the same as class-C. Yes, you do need a good LPF on the
: amplifier output, but it isn't significantly different than conventional
: class-C. I don't see what is extreme about this.

Oh yeah, class-C - what a concept. :-)

I was thinking you could get better linearity with multiple pulses if
the MOSFET could handle the switching frequency. With two pulses, I
suppose the Q of the filter is cut in half.

A marginally related topic that spurred me to think about this. A
friend examined the Radio Shack 300 watt 12VDC->120VAC transverter.
Instead of square wave output, it creates a wave that looks like this:



While I haven't done the Fourier analysis, this looks like a pretty good
sine approximation. The rest of the story here is that they slow down
the MOSFET response enough to broaden the shoulders. This results in
less RFI, but lowers the efficiency. I suppose this could also apply to
a fast MOSFET at HF frequencies.

Perry
AA0ET

25. Re: Anyone know how much 811A's cost...?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 22:43:43 UTC
From: perry@fc.hp.com
Message-ID: <C93J4v.28w@fc.hp.com>
Source record: 120141

I priced these a few months ago. They're usually under $18 from
International, RF Parts, and others - I assume these are the vertical
variety.

I decided to go with the 4CX250B instead because it doesn't take as much
filament current, has an indirectly heated cathode, <$10 "pulls" can
be had the hamfest, and it's really well-behaved.

The disadvantage of the 4CX250B is that it requires extra power supplies
for the screen and control grids, and requires forced air cooling.

Good luck with the project,

Perry Scott
AA0ET

26. Re: FCC power regulations

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-23 23:40:41 UTC
From: tonyz@hpwrce.mayfield.hp.com
Message-ID: <104730001@hpwrce.mayfield.hp.com>
Source record: 120147

under 100 mW is ok? I seem to remember that at 27 MHz this was the
case, anyway which is why walkie talkies didnt require the chicken band
license.....

tony WB6TRU

27. Re: 10 GHz (and other microwave) homebrew project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 15:08:43 UTC
From: jim@n5ial.mythical.com
Message-ID: <1993Jun24.150843.8933@n5ial.mythical.com>
Source record: 120148

In article <1993Jun23.185930.22119@mksol.dseg.ti.com> craigs@dseg.ti.com writes:

>You can get on 10GHz WBFM relatively easy and cheaply. Key is finding the
>10GHz gunnplexer unit. Best of these are the Solfan motion detectors.
>I've found these at flea markets for less than $5. If you make a friend at
>one of the security companies, you can probably get them for less :).

Now *THIS* is the kind of stuff I remember being told about. :-) How difficult are these to find in general? Are all of the motion detectors going to use RF close enough to 10 GHz to retune? Or do some of them use IR? Is there a quick/easy way to tell (assuming they don't tell you, which applies to all of the ones I've seen so far)?

>These devices have a gunn diode and a mixer diode mounted in the unit. The
>gunn diode can be driven with about 7 volts. Build a simple 7 volt supply
>and modulate this with mike audio. The gunn diode will FM!

>For receive, we've been using a 30 MHz I.F. unit of two different flavors.
>One is a radio shack Flavoradio modified for 30 MHz and wideband. The mod
>appeared in the 1991 Microwave Update proceedings (I think it's 91), and I
>can send you a photocopy if you'd like.

Thanks...I might just take you up on that (assuming I can get any of the other gear).

>The other I.F. unit we've been using is the Ramsey 10 meter receiver kit.
>It's a bit more expensive than the flavoradio ($29?) but it makes for a
>better unit. There is a simple mod to this kit to make it wide band.

Do you (or anyone) have the details on this modification? I've built a couple of Ramsey kits before, and as simple, cheap, and good as they are, this might very well be the preferred option (though not right away, because as you mention, they are more expensive).

>Also, the gunn unit drifts like crazy and is quite temperature sensitive.

Hmmmm....this may be a problem. I can see it now---the unit drifts to the point where I'm transmitting out of band, and instead of a relatively simple problem with the FCC, I manage to actually key down on frequencies reserved for testing, etc., at Eglin AFB. Ok, that's a bit of a pessimistic view, but then, with my luck....

And to everyone who has replied (or will reply), thanks!
--jim

--
#include <std_disclaimer.h> 73 DE N5IAL (/4)

```
-------------------------------------------------------------------------------
INTERNET: jim@n5ial.mythical.com | j.graham@ieee.org ICBM: 30.23N 86.32W
AMATEUR RADIO: (packet station temporarily offline) AMTOR SELCAL: NIAL
-------------------------------------------------------------------------------
E-mail me for information about KAMterm (host mode for Kantronics TNCs).
```

28. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 17:54:59 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Jun24.175459.10026@kocrsv01.delcoelect.com>
Source record: 120150

Some good ways to slow-down the turn-on of the FET are:

1) Ramp-up/-down the gate voltage so that it crosses thru Vth at
a somewhat controlled rate (i.e. don't just "slam" the gate hi
and low). This can be done 2 different ways:

-) Simple RC filter

-) Constant Current Source feeding a resistor to ground.
(I'm not sure how tought it is to build a CCS at 28MHz).

2) Connect a series RC network from the Drain to the Gate, and feed
the gate with it's RF source (square clock) thru a resistor. When
the FET starts to conduct, and it's drain voltage drops towards
ground, the RC network tries to yank the Gate back down; an
equilibrium is set-up, and the Drain voltage falls at a nearly
constant (i.e. linear) rate. The same (but inverted) thing
happens at turn off . . . the rising Drain voltage tries to yank
the Gate back up, and thus tries to turn the FET back on. The
slope of the rise/fall is adjusted by changing the "C" and/or the
"R".

I have recently been involved in the design of an output driver
(for a transmission solenoid) that we PWM, and needed edge-rate
control on to minimize RFI. The driver is a hi-side driver, using
an IRF9530 (P-channel "mirror image" part to the IRF530, family
member of the IRF511, et al), and we used the constant current source
(although we thought about adding the RC D-G network); of course,
out frequency of operation is only 600 Hz, so it's easy to build a
CCS and control the rise/fall times to 5 or 10usec. We did see
good waveshaping with the RC D-G network, though, so it might help
you reduce some of your harmonics. The only downfall is that you
will spend more time in the "linear" region and therefore
dissipate more power.

Good Luck.
--
James C. Bach Ph: (317)-451-0455
Advanced Project Engineer GM-NET: 8-322-0455
Powertrain Strategy Group Amateur Radio: WY9F
Delco Electronics Corp

29. 12V CRT/DISPLAY ideas/sources wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 18:11:05 UTC
From: mike@austin.ibm.com
Message-ID: <C9516H.30zv@austin.ibm.com>
Source record: 120143

I am fiddling with constructing a spec-an and would love to make it portable.
What I need is to find a CHEEP display format that runs on 12V. Any ideas?

Where can I find cheap X-Y monitor, say 4" - 10"? Are LCD displays worth the
effort (the driver HW, etc). Are the refresh rates on LCD high enough (10-30Hz)?

Ideas welcome.

Thanks
Mike Condon WB9MMR

Standard Disclaimer applies......

30. Re: 12V CRT/DISPLAY ideas/sources wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 21:50:49 UTC
From: johnr@tvnews.tv.tek.com
Message-ID: <1993Jun24.215049.9674@tvnews.tv.tek.com>
Source record: 120144

In article <C9516H.30zv@austin.ibm.com> mike@austin.ibm.com () writes:
>
>I am fiddling with constructing a spec-an and would love to make it portable.
>What I need is to find a CHEEP display format that runs on 12V. Any ideas?
>
>Where can I find cheap X-Y monitor, say 4" - 10"? Are LCD displays worth the
>effort (the driver HW, etc). Are the refresh rates on LCD high enough (10-30Hz)?
>
>Ideas welcome.
>
>Thanks
>Mike Condon WB9MMR
>
Well, there are lots of cheap composite monitors in the usual surplus
catalogs. Most of them run on 12 VDC. How about rasterizing your X-Y
output? Probably no more difficult than hacking an LCD driver...

John Reynolds
Tektronix TV Division
Beaverton, OR

31. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 22:58:02 UTC
From: alanb@sr.hp.com
Message-ID: <C95EGs.JKF@srgenprp.sr.hp.com>
Source record: 120145

Dana H. Myers (dana@lando.la.locus.com) wrote:
: In article <C91nI7.L5y@fc.hp.com> perry@fc.hp.com (Perry Scott) writes:
: >: >The biggest drawback is a high gate capacity, but it could be
: >: >neutralized.
: >
: >: Well, it can, but there are limits to how well you can do this.
: >: One approach I intend to try, someday, is to use a high speed FET
: >: driver chip to very rapidly switch the FET and avoid input mismatch.
: >: This approach should yield good class D/E operation at frequencies
: >: below 14 Mhz.
: >
: >Don't know if we're thinking the same thing, but I've considered using
: >a (fast) pulse width modulator....

: We're thinking the same thing. Actually, only one pulse per cycle
: is required, the same as class-C. Yes, you do need a good LPF on the
: amplifier output, but it isn't significantly different than conventional
: class-C. I don't see what is extreme about this.

The main problem with this is that you need a VERY high-current driver stage to charge/discharge the input capacitance. With a sine-wave driving voltage, the peak charging current = peak drive voltage / capacitive reactance = Vpk * 2 PI F C. With a square-wave driving voltage, the charging current flows in brief pulses at each voltage transition. If effect, you are charging/discharging the capacitance in a much shorter time, which requires much higher currents. Another way of looking at it is that a square wave has high harmonic energy which causes high capacitive currents (Ipk = Vpk * 2 PI F C, proportional to F).

The faster the square wave transitions, the higher the peak current. You want fast transitions to get high efficiency. Not to say it can't be done, but the design is non-trivial. Exactly the same problem exists in switching power supply designs. It is significant that most switchers operate below a few hundred kHz. Some of the sine-wave switching converters do operate up into the low MHz range.

AL N1AL

32. Re: 12V CRT/DISPLAY ideas/sources wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-24 23:08:05 UTC
From: alanb@sr.hp.com
Message-ID: <C95ExI.K7H@srgenprp.sr.hp.com>
Source record: 120146

mike@austin.ibm.com wrote:

: I am fiddling with constructing a spec-an and would love to make it portable.
: What I need is to find a CHEEP display format that runs on 12V. Any ideas?

: Where can I find cheap X-Y monitor, say 4" - 10"? Are LCD displays worth the
: effort (the driver HW, etc). Are the refresh rates on LCD high enough (10-30Hz)?

How about a monochrome PC display? You can pick them up for $5 to $25
depending on condition and source. I believe they run on +12V.

AL N1AL

33. Re: 10 GHz (and other microwave) homebrew project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-25 03:37:11 UTC
From: zlau@arrl.org
Message-ID: <1639@arrl.org>
Source record: 120152

In rec.radio.amateur.homebrew, craigs@dseg.ti.com (Craig Young) writes:

>With the 30 MHz I.F. unit attached to the mixer
>diode, you will now receive a signal
>30 MHz off of the xmit frequency. The gunnplexer
>can be retuned to the ham band. It\
>is quite touchy and you'll probably want to borrow
>the services of someone's
>spectrum analyzer. Also, the gunn unit drifts like

Volume 2 of the RSGB has a cheap technique for measuring
the frequency. You point the horn at a flat metal plate
and measure the diode current with a milliammeter as the
distance between the horn and plate are varied. The
distance between current peaks or nulls can be used to
calculate frequency, supposedly accurate to about 100 MHz
at 10 GHz. page 13.27.

>crazy and is quite temperature
>sensitive. We tuned a few up in January and used
>them in the January contest, but
>couldn't find each other in June!!!! Oh, Well.

It normally helps to splurge and get one varactor tuned one to
chase the others. You could also use variable IFs, but this
doesn't seem as popular. I'll eventually get a 24 GHz varactor
tuned Gunn transceiver, as soon as I can find one cheap enough :-).

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

34. Re: 12V CRT/DISPLAY ideas/sources wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-25 06:32:15 UTC
From: whit@carson.u.washington.edu
Message-ID: <20e65f$ifp@news.u.washington.edu>
Source record: 120149

In article <C95ExI.K7H@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>mike@austin.ibm.com wrote:
>
>: I am fiddling with constructing a spec-an and would love to make it portable.
>: What I need is to find a CHEEP display format that runs on 12V. Any ideas?
>

>How about a monochrome PC display? You can pick them up for $5 to $25
>depending on condition and source. I believe they run on +12V.

Close; the PC monochrome display from IBM runs off 24VDC
internally. Various other monochrome displays, of which one
may be found in any old terminal, run on 12V, 24V, 28V, 70V...

John Whitmore

35. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-25 13:45:20 UTC
From: keith@radio.nl.nuwc.navy.mil
Message-ID: <1282@radio.nl.nuwc.navy.mil>
Source record: 120151

I've been following this thread, and thought I'd jump in...

I've played with a bunch of different power mosfets in HF RF service...
I think I've used the IRF511 (sounds like everyone's tried that one), the
IRF610, IRF710, and the IRFP440. The IRFP440 is a TO3P (TO247) version of
the IRF440. All of the designs I've played with have been class D switching
amps.

My "current" prototype (I haven't fired it up in quite a while) is a pair
of IRFP440's with drains in parallel and independent drive circuits for each
gate. I was building an AM transmitter... on 75 meters I managed to get
about 100 watts of carrier out and modulate to 125% in the positive direction,
so that's about 500 watts PEP out. Not bad for $15 worth of fets.

Someone mentioned slowing down the switching edgerate. I'd think that for
use at these frequencies, you'd have to make the edgerate as fast as possible
to avoid blowing up the fets. The longer they're slewing, the more power
they'll dissipate. I used as low of an impedance to drive the gates as
I could to make them switch as fast as possible.

I also found that I got best operation with something other than a 50% duty
cycle square wave. The drive duty cycle was adjustable, and I'd tweak it
for best output and modulation characteristics. I think this is due to
the asymetry in the fets Ton and Toff.

Very interesting discussion...

73,
Keith (WA2Q)
---
keith@radio.nl.nuwc.navy.mil

36. Re: 12V CRT/DISPLAY ideas/sources wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-25 18:40:31 UTC
From: markz@ssc.com
Message-ID: <1993Jun25.184031.9926@ssc.com>
Source record: 120153

John Reynolds (johnr@tvnews.tv.tek.com) wrote:
: Well, there are lots of cheap composite monitors in the usual surplus
: catalogs. Most of them run on 12 VDC. How about rasterizing your X-Y
: output? Probably no more difficult than hacking an LCD driver...

But even the 5 inch ones draw about 3/4 of an Amp.

Mark Zenier markz@ssc.wa.com markz@ssc.com

37. HV Power supply with switcher ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-26 21:26:40 UTC
From: antsu@castor.utu.fi
Message-ID: <ANTSU.93Jun26232640@castor.utu.fi>
Source record: 120154

Hi!

Does anyone have a working schematic for a HV switching power supply ?
(3-4KV and 1A)

Maybe that would be best done with ~500V 1A supplies in series.

73 A-P OH1YF
--
****
* Mail: Antti-Pekka Virtanen E-Mail: antsu@utu.fi *
* Arholankuja 3 as 21 antsu@mea.utu.fi *
* SF-21100 Naantali antsu@nic.funet.fi *
* Finland antsu@sandra.pp.fi *
****

38. Re: Power MOSFETs as RF amplifiers (and homebrew FAQ?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-27 22:39:45 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jun27.223945.101399@locus.com>
Source record: 120155

In article <C95EGs.JKF@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
[Discussion of rapidly switching a power MOSFET deleted]

>The main problem with this is that you need a VERY high-current driver
>stage to charge/discharge the input capacitance. With a sine-wave
>driving voltage, the peak charging current = peak drive voltage /
>capacitive reactance = Vpk * 2 PI F C. With a square-wave driving
>voltage, the charging current flows in brief pulses at each voltage
>transition. If effect, you are charging/discharging the capacitance
>in a much shorter time, which requires much higher currents. Another
>way of looking at it is that a square wave has high harmonic energy
>which causes high capacitive currents (Ipk = Vpk * 2 PI F C,
>proportional to F).

Let's do some math here...

Suppose you use an MTP3055E. This part has a specified "total gate charge"
of 9nC at a voltage level of 8V. This means that 9nC of electrons are
required to charge the gate to 8V.

So, let's make this number useful. Remember that 1A = 1 Coulomb/1Second.
Since we are talking about a square wave with a repetition rate of 1Mhz.
This means that the gate will be charged to 8V 1 million times every second.
Yes, the gate is discharged, but that only completes the circuit without
drawing any additional current. Combining these provides:

Ig = f * Qg

Where:
Ig = total gate current
f = frequency in Hertz
Qg = specified gate charge.

So, an 8V gate voltage gives Qg of 9nC, multiplied by 1e+6 Hz results in
a gate current of 9mA. 14Mhz would result in 126mA of gate current on the
average, not a lot. For practical purposes, the average gate current
is going to tbe the same whether the drive is a square wave or sine wave.
By the way, 9nC/8V = 1125 pF of effective gate capacitance.

However, as Alan points out, the peak current is considerably higher than
the average. For practical purposes, the peak current is probably limited
by the driver. Suppose our driver can supply a 500 mA peak, and remember
that V = (t * I) / C, that means 500 mA will charge 1125 pf to 8V in 18nS.
Well, the driver really isn't a 500mA current source. At some point, the
current drops as the voltage on the gate increases. Still, our FET will
be switched fully on in about 20 nS. Not bad, and nothing is extreme.

The IRF511 is not adequately specified to perform the same calculations, but a crude estimate is that you could charge the gate to 8V in under 5nS using a 500mA limited step to 8V.

If you have a stronger driver, say 1.5A, the MTP3055E would switch in maybe 6 nS.

All of these numbers do not take into account the series inductance of the gate lead and metallization. Your mileage will vary.

>The faster the square wave transitions, the higher the peak current.
>You want fast transitions to get high efficiency. Not to say it
>can't be done, but the design is non-trivial. Exactly the same problem
>exists in switching power supply designs. It is significant that
>most switchers operate below a few hundred kHz. Some of the
>sine-wave switching converters do operate up into the low MHz range.

There's no sense in operating higher than you need, since the gate driver current increases proportionally with respect to frequency. There certainly are advantages to using the lowest frequency which gives you the desired ripple, over/undershoot, and inductor dimensions.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

39. Cheap preamp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-28 06:56:24 UTC
From: dbraun@ilx049.intel.com
Message-ID: <20m4mo$2kho@ilx018.intel.com>
Source record: 120156
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew

I noticed Radio Shack (and others) sell cheap ($30 with remote
power supply)) mast-mounted
pre-amps for TV use. I was wondering if these things work well
enough to be useful for things like satellite reception.
Would they be worth modifying? An obvious mod would be to
add an input filter for the band of interest. Or perhaps the
case could be cracked open and the RF amp transistor could
be replaced with a better one? Has anyone tried this, or seen any magazine
articles about this sort of thing?

(Obviously it wouldn't do T/R switching, but that's OK)

--
Doug Braun (N1OWU)

Email: dbraun@iil.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC1-41
Matam Scientific Center
Haifa, Israel 31015

"There is no human problem which could not be solved if
people would simply do as I advise." -- Gore Vidal

40. Re: HV Power supply with switcher ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-28 15:17:02 UTC
From: jbloom@arrl.org
Message-ID: <1648@arrl.org>
Source record: 120157

In rec.radio.amateur.homebrew, antsu@castor.utu.fi (Antti-Pekka Virtanen) writes:
>Hi!
>
>Does anyone have a working schematic for a HV switching power supply ?
>(3-4KV and 1A)

There was a 2-kV, 1.5-A switcher in the February, 1991 QEX. Maybe that
would help? (If you need a copy, email lweinber@arrl.org with your
copy request.)

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

41. what's inside a X-tal filter with 3 terminals?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 11:31:09 UTC
From: wout@dutentb.et.tudelft.nl
Message-ID: <1993Jun29.113109.25425@donau.et.tudelft.nl>
Source record: 120158

Hi,

To improve the selectivity of my (portable) receiver, I have to replace the ceramic (four-terminal) 455-kHz filter with an equivalent X-tal filter.

Frequently I see X-tal filters with three terminals and I guess they would be fitted for the job. But as I only know X-tals with two terminals and their circuit models, I wonder what is extra in a three-terminal version ?

Anyone knows ?

Best 73s,

Wouter

42. 70cm preamp construction hiccup

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 15:48:45 UTC
From: ae517@Freenet.carleton.ca
Message-ID: <C9E3xA.Anz@freenet.carleton.ca>
Source record: 120159

I've put together the 70cm preamp that was described in the
latest Handbook, designed by Chip Angle. I can't seem to
get neither the gain nor the NF quoted. I have done
some parts substitutions, ie. a MGF 1302 GaAsFET instead
of the MGF 1402, a slightly different output trimmer
capacitor (although of equal quality). I, however, was
unable to find G-10 Glass Epoxy double sided cct board
locally, so used some other Glass Epoxy cct board that was
available.

I am unable to peak the preamp to improve gain and suspect that
I should have used G-10 board as specified perhaps due to
differences in cct board capacity.

Does anyone know where I could get G-10 double sided cct board?
Would FR-4 cct board available from NEWARK be an acceptable
substitute? I'd really like to get this cct running as it
should.

Any help would be appreciated.

73 de ve3uav
ve3uav@amsat.org

--

43. Re: what's inside a X-tal filter with 3 terminals?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 17:03:17 UTC
From: nagle@netcom.com
Message-ID: <nagleC9E7DI.FHz@netcom.com>
Source record: 120160

wout@dutentb.et.tudelft.nl (Wout Serdijn) writes:
>To improve the selectivity of my (portable) receiver, I have to
>replace the ceramic (four-terminal) 455-kHz filter with an
>equivalent X-tal filter.
>Frequently I see X-tal filters with three terminals and I guess
>they would be fitted for the job. But as I only know X-tals with
>two terminals and their circuit models, I wonder what is extra in
>a three-terminal version ?

Basically, there's an input, an output, and a ground. The
devices are usually symmetrical; input and output can be interchanged.
The catalog of Toko, Inc., (US Headquarters 708-297-0070) has some
good data sheets on these devices.

John Nagle

44. FM Transmitter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 17:45:22 UTC
From: snark@paradox.engin.umich.edu
Message-ID: <20pv3iINNq58@srvr1.engin.umich.edu>
Source record: 120161

Dunno if this is the right group, but...

Anyone have any plans for a short-range FM transmitter? Kinda like
a "Mr. Microphone" type thing.

Location of someone with kits might be ok also, although I *would*
like to make it myself. :)

Thanks!

-snark

45. Re: what's inside a X-tal filter with 3 terminals?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 19:29:10 UTC
From: alanb@sr.hp.com
Message-ID: <C9EE4n.K6D@srgenprp.sr.hp.com>
Source record: 120162

Wout Serdijn (wout@dutentb.et.tudelft.nl) wrote:

: Frequently I see X-tal filters with three terminals and I guess
: they would be fitted for the job. But as I only know X-tals with
: two terminals and their circuit models, I wonder what is extra in
: a three-terminal version ?

A crystal filter has more than one crystal in it. The crystals
are connected in a circuit, usually with other components such as
capacitors, inductors and/or transformers. The three terminals
are the input, the output and the common (ground).

AL N1AL

46. Re: 70cm preamp construction hiccup

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 19:32:58 UTC
From: alanb@sr.hp.com
Message-ID: <C9EEAz.KA9@srgenprp.sr.hp.com>
Source record: 120163

Russ Renaud (ae517@Freenet.carleton.ca) wrote:

: I've put together the 70cm preamp that was described in the
: latest Handbook, designed by Chip Angle. I can't seem to
: get neither the gain nor the NF quoted. ...
: I, however, was
: unable to find G-10 Glass Epoxy double sided cct board
: locally, so used some other Glass Epoxy cct board that was
: available.

It would make a big difference if you used single-sided board when double-sided board was specified. But I wouldn't expect that the exact grade of glass-epoxy board material would make a huge difference at 450 MHz if the board is the same thickness and double-sided.

AL N1AL

47. "final" tube mods for Swan wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-29 19:57:24 UTC
From: genew@techbook.techbook.com
Message-ID: <20q6r4$pp5@techbook.techbook.com>
Source record: 120164
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

[Article crossposted from rec.radio.amateur.equipment]
[Author was Gene Wolford]
[Posted on 29 Jun 1993 12:55:29 -0700]

A friend has an old Swan tranceiver which uses TV sweep tubes for finals.
He uses 6MJ6's to replace the original 6LQ6's.
He wonders if anyone has done a conversion to 6146's?

Anyone know anything about this?

Thanks,
Gene

--
Those who beat their swords into plowshares
are destined to plow for those who don't.
genew@techbook.COM
Please direct flames to: genew@ucant.gethere.frmhere
--
Those who beat their swords into plowshares
are destined to plow for those who don't.
genew@techbook.COM
Please direct flames to: genew@ucant.gethere.frmhere

48. Re: 70cm preamp construction hiccup

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 04:51:06 UTC
From: zlau@arrl.org
Message-ID: <1657@arrl.org>
Source record: 120068

In rec.radio.amateur.homebrew, beyer@athena.uto.dec.com (Peter Beyer) writes:
>
>Also the MGF1302 has totaly different S-paramameters than the MGF1402, so
>it defenitly needs different tuning to match the optimum noise impedance
>for lowest NF.

The 1302 is the same chip as a 1402, but in a different package. The
difference is quite noticeable at 6 GHz.

!MGF1302 !VDS=3V IDS=10MA

GHZ S MA R 50
! S11 S21 S12 S22

0.5 .992 -12.5 3.610 168.6 .013 82.0 .721 -08.1
1 .980 -24.5 3.593 158.6 .023 73.2 .704 -16.5

!MGF1402 !VDS=3V IDS=10MA

0.5 .992 -14.5 3.694 167 .014 80.6 .741 -10.0
1 .972 -28.0 3.589 155.5 .026 70.5 .729 -19.8

However, at 432 MHz, I'm not sure that the difference
is really enough to matter, at least when it comes
to working or not working reasonably well. Unfortunately,
I don't have the noise parameters for these devices at 432
MHz, which are really what you want to look at.

>
>If you need a good preamp, it's better to have a look at the 432 Preamp
>described in the Dubus magazine lately, which has 0.3 NF and unconditional
>stable between .1 and 20 GHz and needs no expensive glass PCB

A bit of metal work is needed to build this preamp. I would regard the
39x25mm epoxy PCB with an er of 4.5 as essential, unless you want to
redesign the preamp.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

49. TWT Power Supply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 10:11:24 UTC
From: beyer@athena.uto.dec.com
Message-ID: <1993Jun30.101124.6386@e2big.mko.dec.com>
Source record: 120165

Hi,

I am looking for people who have experience in building a power supply for
a TWT. Recently in UKW-Berichte/VHF-Communications a power supply was
published... Does anyone have any experience/comments with/on that one?

I need a power supply for my RW1125 (10GHz). The data sheet tells a commercial
power supply is available for that, but haven't seen them in surplus.

Any comments/suggestions are welcome. If someone has a power supply or TWTA
available -) please drop me a line..

/Peter -PA3AEF-

--

Peter Beyer
Windows, Graphics & Multimedia
Digital Equipment b.v.
beyer@athena.uto.dec.com

50. Re: 70cm preamp construction hiccup

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 10:19:00 UTC
From: beyer@athena.uto.dec.com
Message-ID: <1993Jun30.101900.6627@e2big.mko.dec.com>
Source record: 120166

In article <C9EEAz.KA9@srgenprp.sr.hp.com>, alanb@sr.hp.com (Alan Bloom) writes:
|>
|>Russ Renaud (ae517@Freenet.carleton.ca) wrote:
|>
|>: I've put together the 70cm preamp that was described in the
|>: latest Handbook, designed by Chip Angle. I can't seem to
|>: get neither the gain nor the NF quoted. ...
|>: I, however, was
|>: unable to find G-10 Glass Epoxy double sided cct board
|>: locally, so used some other Glass Epoxy cct board that was
|>: available.

Also the MGF1302 has totaly different S-paramameters than the MGF1402, so
it defenitly needs different tuning to match the optimum noise impedance
for lowest NF.

If you need a good preamp, it's better to have a look at the 432 Preamp
described in the Dubus magazine lately, which has 0.3 NF and unconditional
stable between .1 and 20 GHz and needs no expensive glass PCB

/Peter -PA3AEF-

--

Peter Beyer
Windows, Graphics & Multimedia
Digital Equipment b.v.
beyer@athena.uto.dec.com

51. Re: what's inside a X-tal filter with 3 terminals?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 13:49:03 UTC
From: dnewkirk@arrl.org
Message-ID: <1655@arrl.org>
Source record: 120167

In rec.radio.amateur.homebrew, alanb@sr.hp.com (Alan Bloom) writes:

>A crystal filter has more than one crystal in it. The crystals
>are connected in a circuit, usually with other components such as
>capacitors, inductors and/or transformers. The three terminals
>are the input, the output and the common (ground).

Actually, a monolithic filter has only one crystal, but multiple
resonators. :-)

Seems like good, short grounding would be a first priority with these
three-terminal grounds. Much inductance on that and it'll couple
the filter stages as it "grounds" them.

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

52. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 17:27:52 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-741461268@unomaha.edu>
Source record: 120069
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

53. Re: "final" tube mods for Swan wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 19:41:26 UTC
From: keating@rtsg.mot.com
Message-ID: <keating.741469286@galena13>
Source record: 120072
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

genew@techbook.techbook.com (Gene Wolford) writes:

>[Article crossposted from rec.radio.amateur.equipment]
>[Author was Gene Wolford]
>[Posted on 29 Jun 1993 12:55:29 -0700]

>A friend has an old Swan tranceiver which uses TV sweep tubes for finals.
>He uses 6MJ6's to replace the original 6LQ6's.
>He wonders if anyone has done a conversion to 6146's?

>Anyone know anything about this?

I don't have my tube manuals at work but I seem to remember that the
6LQ6s were rated at a temporary overload of 200w for 30seconds. I don't
think the 6146B's were rated the same way. It may be possible, but not
with the same power output. (but probably a cleaner output..)
~
~

--
Caution, Thermostellar device. keating@rtsg.mot.com

54. Ocean State Electronics

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 20:13:51 UTC
From: freeman@eagle.sangamon.edu
Message-ID: <C9GAv4.7DH@news.cso.uiuc.edu>
Source record: 120070

Howdy,
Has anyone built one of the qrp cw transceiver kits from them? I
just sent away for their catalog. I'm looking for a decent kit to put
together to take on camping trips.

Tnx es 73,
Jay

--
++
+ Jay Freeman, WT9S Packet: wt9s@w9yci.il.usa.noam +
+ internet: freeman@eagle.sangamon.edu +
++

55. trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-06-30 21:30:43 UTC
From: cheech@med.unc.edu
Message-ID: <20t0m3$did@samba.oit.unc.edu>
Source record: 120071

Greetings,

The recent postings about 10 GHz experimenting are interesting. I am also trying to dabble at 10 GHz, but have many more questions than answers.

In response to an initial request on the net some months back, Zack Lau suggested door control companies as a source for Gunn oscillators at 10 GHz. I managed to do this after a couple of months of polite inquiries.

What I got were seven black boxes with large red tags inscribed with some variant of "BAD", about half of the stash of that particular type at the local door control company. They were a type that weren't being used anymore. Not bad for a couple of bucks in long distance and gas.

The units I got are C&K model 7110. Some are marked C&K/Solfan. A quick functional test showed that five of the seven are functional i.e., the led comes on when you wave a hand in front of the horn. The other two have no DC voltage, which may be cause or effect. The resonant cavity appears to be X-band size, so they may be tunable to the amateur allocation. The friend who knows the guy with the 24GHz spectrum analyzer is suffering from an approaching deadline at work, so I don't know the frequency yet.

The only books on microwave I can get my hands on are from the physics library, so if it doesn't have an exact mathematical solution, it doesn't show up in the books. I not only haven't found the local microwave expert, I haven't found anyone who knows anyone who might know such an expert. And since one of the RSGB Microwave Handbooks would exceed the budget for this project for the next six months, I would greatly appreciate any assistance from the group.

The only connection to the Gunn oscillator is to the Gunn diode, there is no varactor for frequency control or mixer diode. There is a screw in the cavity which should be for tuning the frequency of the oscillator. There is a screw just outside the iris, which projects into the iris opening. Maybe a matching adjustment? There is another one in the horn. I have no idea what this one does.

After some time looking over the circuit (board, I don't have a schematic), it looks as though the power supply maintains a constant current through the Gunn diode. The motion detect circuit watches the power supply voltage to determine when to open the door.

Obviously, the presence of an object in the field changes the impedance of the diode, so the supply cranks up the voltage to maintain a constant current. I don't understand how (why) this happens. There are also some RC differentiators and a low pass filter in the detect circuit to ignore slow changes.

Questions:

1) How does it do that? A change in the power reflected back into the horn must affect the current in the diode, but how?

2) Is it possible to retrofit a varactor into the oscillator? What kind of varactor would work? How should it be mounted?

3) What about getting a mixer into the circuit? I assume this would have to be in a small section of waveguide between the resonant cavity and the horn. What is the best way of coupling some of the output energy into the mixer? The ferrite circulator used in the Gunnplexers is probably touchy and expensive, but I could be wrong.

I would appreciate any suggestions about how to make something enjoyable out of these, although trolling for taillights is not really what I had in mind. I'm familiar with RF electronics up to a couple hundred MHz, I've messed about with digital electronics, and I know my way around a machine shop, so some improvisation is possible (desirable). I also get this strange pleasure from making something useful or fun out of junk. Maybe a psychotherapist could help. Or a larger income.

Thanks,

Greg AC4YT

56. Transmatch in Now you're Talking

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-01 00:31:40 UTC
From: i7994779@wsuaix.csc.wsu.edu
Message-ID: <1993Jul1.003140.20751@serval.net.wsu.edu>
Source record: 120073

In last year's "Now You're Talking on page 7-5 there is a picture of a transmatch and the diagram of the cicuit. What I am looking to know is how hard would that be to build, and what exactly would I need? I see the circuit and I understand what I am looking at (somewhat) but don't inductors come in sizes and the same thing for variable capacitors.

Thanks for the help. I know I'll need one of these and it would be fun to build it. (I think?)

==========
Patrick D. Walters Washington State University
i7994779@wsuaix.csc.wsu.edu NW Collegiate Cycling Conference Director
Voice at (unavailable) KB7VPO
==========

57. Re: TWT Power Supply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-01 13:57:08 UTC
From: whiting@cadence.com
Message-ID: <1993Jul1.135708.19938@Cadence.COM>
Source record: 120076

Hello Peter,

I am in the process of building a TWT PSU (also for a 10GHz tube). There is some useful data in the RSGB Microwave handbook, volume 3. This PSU runs from 12V so is good for /P operation. I have some concerns about the heater supply (a self-oscillating transistor pair), so I am using push-pull power FET pairs for the heater supply, the collector supply and the Helix supply (3 separate inverters). This project has taken a long time (6 months so far, but maybe only 1 hour/week) and needs a bit of experimentation. Several people in the UK have built this form of PSU.

See you on 3cm (I have been (just) heard in PA from home, @390km).

73

Neil Whiting G4BRK whiting@cadence.com

58. SL-6440 Availability

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-01 17:33:09 UTC
From: dnewkirk@arrl.org
Message-ID: <1665@arrl.org>
Source record: 120074

A correspondent of mine seeks to buy a few Plessey SL6440 mixer ICs for lab testing. He's willing to get them from England, but I recall having seen a note from someone on the newsgroups that an individual or group in the States was selling them in small quantities -- maybe at Dayton?

Positive responses welcome.

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

59. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-01 19:42:16 UTC
From: cujrc@uxa.ecn.bgu.edu
Message-ID: <20vemo$hu4@uxa.ecn.bgu.edu>
Source record: 120075
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.space,soc.culture.austria,alt.games.mk,alt.sex.fetish.amputee,alt.sports.baseball.sf-giants,alt.unsubscribe-me,alt.video.games.reviews,alt.wesley.crusher.die.die.die

NOT AGAIN!!!!! SHEESH, ENOUGH ALREADY! I JUST WANNA BE POOR.

--

"Community? Let me tell you something. This community means about as
much to me as a festering bowl of dog snot." R. J. Fletcher
John Corey cujrc@uxa.ecn.bgu.edu

60. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 07:06:25 UTC
From: zra60100@nfhsg2.rus.uni-stuttgart.de
Message-ID: <210mph$1cme@info2.rus.uni-stuttgart.de>
Source record: 120077
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.space,soc.culture.austria,alt.games.mk,alt.sex.fetish.amputee,alt.sports.baseball.sf-giants,alt.unsubscribe-me,alt.video.games.reviews,alt.wesley.crusher.die.die.die

In article <C9I1vD.rCo@ns1.nodak.edu> msjurset@plains.NoDak.edu (Mark Sjurseth) writes:
>
>1) IMMEDIATELY mail $1.00 to the five names listed below, starting at #1.
> Send cash only please (total investment on your part is $5.00). Enclose
> a note with each letter stating:

just don't make things too complicated. if you want to get rid of your money
just send it to me. any currency and amount is accepted.

michael

Michael Resch Phone: ++49 (0)711-685-5834
Rechenzentrum Universitaet Stuttgart Fax: ++49 (0)711-678-8363
Numerical Methods for Supercomputers
Allmandring 30 email: resch@rus.uni-stuttgart.de
70550 Stuttgart
Germany
----

61. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 08:48:38 UTC
From: agodwin@acorn.co.uk
Message-ID: <24636@acorn.co.uk>
Source record: 120078

In article <20t0m3$did@samba.oit.unc.edu> cheech@med.unc.edu (cheech@ocean.med.unc.edu (Greg Young)) writes:
>
>3) What about getting a mixer into the circuit? I assume this would
> have to be in a small section of waveguide between the resonant
> cavity and the horn. What is the best way of coupling some of the
> output energy into the mixer? The ferrite circulator used in the
> Gunnplexers is probably touchy and expensive, but I could be wrong.
>

Cheap and cheerful motion detectors just seem to put the mixer diode in line, though with various placements (offset, central, with/without an aperture plate between Gunn diode & mixer diode, etc - I'd be interested to know what the pros ands cons of these schemes are).

The British Amateur TV Club had a short series on 10GHz gear using motion detector modules a while ago - you can get back copies from Peter Delaney G8KZG, 6 East View Close, Wargrave, Berkshire, RG10 8BJ (+44 734 403121) at GBP 1.50 per copy. You want issues 152, 153, 154 and 156 (skip 155) - 153 has a design for an inline mixer in a hunk of waveguide that's intended for kitchen table construction. Photocopies of articles are also available - write to me if you want page numbers.

On a related note, many of the simple Gunn modulator designs are based on voltage regulators. These seem to work surprisingly well to a MHz or so, but the TV people usually use discrete designs for better performance. I've noticed some video line drivers (Elantec EL2008, EL2009, EL2099) that appear to be well suited for use as a modulator for video or medium speed data, since they have current drive capability to spare, slew rates up to 2500 V/us and bandwidths to 70MHz. Has anyone tried using these devices for Gunn diode supplies ? I'd be interested in your results if you have.

-adrian, g7hwn

62. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 12:46:08 UTC
From: segrest@bobseg.enet.dec.com
Message-ID: <211amg$m1r@sousa.ako.dec.com>
Source record: 120079
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.space,soc.culture.austria,alt.games.mk,alt.sex.fetish.amputee,alt.sports.baseball.sf-giants,alt.unsubscribe-me,alt.video.games.reviews,alt.wesley.crusher.die.die.die

This note is a clear cut vote for better conference moderation. Stupid chain letters have been around too long and it is a great disapointment for me to see that we are being plagued with this childish dung here. It has nothing to do with the purpose of this notes file and should not be tolerated.

--
Bob Segrest
segrest@bobseg.enet.dec.com

63. Re: SL-6440 Availability

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 14:43:08 UTC
From: mike@austin.ibm.com
Message-ID: <C9JKvx.2LB2@austin.ibm.com>
Source record: 120080

I did get a '6440 at Dayton this year. They were selling them at the British QRP group's booth. The name of the company that was selling them was Kanga-US or something like that (hopefully this will jog someone's memory :-).

For what it's worth.....The fella who sold it to me was very helpful - even followed up several weeks later by sending me the Plessey data sheets and a circuit for a QRP rcvr using the '6440.

Hope this helps.....

Mike Condon WB9MMR

Nothing I say could be remotely construed to represent the views of my employer.

64. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 16:02:18 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <211m6aINNplq@newsstand.cit.cornell.edu>
Source record: 120081

In article <24636@acorn.co.uk> Adrian Godwin, agodwin@acorn.co.uk writes:
>The British Amateur TV Club had a short series on 10GHz gear using
>motion detector modules a while ago - you can get back copies from
>Peter Delaney G8KZG, 6 East View Close, Wargrave, Berkshire, RG10 8BJ
>(+44 734 403121) at GBP 1.50 per copy. You want issues 152, 153, 154
>and 156 (skip 155) - 153 has a design for an inline mixer in a hunk
>of waveguide that's intended for kitchen table construction.
>Photocopies of articles are also available - write to me if you want
>page numbers.
>
>On a related note, many of the simple Gunn modulator designs are based
>on voltage regulators. These seem to work surprisingly well to a
>MHz or so, but the TV people usually use discrete designs for better
>performance. I've noticed some video line drivers (Elantec EL2008,
>EL2009, EL2099) that appear to be well suited for use as a modulator
>for video or medium speed data, since they have current drive capability
>to spare, slew rates up to 2500 V/us and bandwidths to 70MHz.
>Has anyone tried using these devices for Gunn diode supplies ?
>I'd be interested in your results if you have.
>

Hi, I just dropped into this thread but it looks like something I have
been curious about. I've got a pair of gunn diode oscillators that I
picked up for experimenting with at the Rochester NY hamfest. I'd be
content to do anything interesting with them (other than light up my
radar detector, did that during checkout) - but what I'd really like to
know is how do people use them to transmit ATV? We have an ATV repeater
that is very local to me (less than 2 miles LOS) and we have some
interference problems with the inputs on 440 when the FM machines on the
far hill crank up. I"m interested in building a SHF/microwave link into
the machine to allow me to source good video to it (the output is clear
and can be seen throughout downtown, we just have a problem on the input
side). 10Ghz sounds like it would be a good match to the requirement and
now i have some hardware. How complicated is it to modulate standard ntsc
onto it and demod it back off? I've briefly seen one of the british
articles (while browsing a book) and it looks like just voltage
modulating the gunn diode for FM, but I'm not as clear what you use at
the other end for a receiver. Both my units have mixer diodes in them, I
think at right angles.

Anyway, can anyone point me at some of these TV applications? Thanks.

Kevin, WB2EMS (fkf1@cornell.edu)

65. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 16:02:47 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <211m77INNplp@newsstand.cit.cornell.edu>
Source record: 120082

In article <24636@acorn.co.uk> Adrian Godwin, agodwin@acorn.co.uk writes:
>interested to know what the pros ands cons of these schemes are).

66. Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 17:23:38 UTC
From: hanner@sumax.seattleu.edu
Message-ID: <211quqlNNr8j@sumax.seattleu.edu>
Source record: 120083

I need help building a DTMF decoder. I can't seem to find a schematic anywhere, except those that reference an unavailable Radio Shack custom chip.

Thanks,

Curtis Hanner
N7mWC

67. Re: Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 19:26:21 UTC
From: alanb@sr.hp.com
Message-ID: <C9Jxzy.L3x@srgenprp.sr.hp.com>
Source record: 120084

Curtis Hanner (hanner@sumax.seattleu.edu) wrote:

: I need help building a DTMF decoder. I can't seem to find a schematic
: anywhere, except those that reference an unavailable Radio Shack custom chip.

You can buy them for $30 or $40 from Com Spec and elsewhere. Seems like
it would hardly be worth the trouble to build one.

AL N1AL

68. Re: Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 20:06:20 UTC
From: jbloom@arrl.org
Message-ID: <1687@arrl.org>
Source record: 120085

In rec.radio.amateur.homebrew, hanner@sumax.seattleu.edu (Curtis Hanner) writes:
>
>I need help building a DTMF decoder. I can't seem to find a schematic
>anywhere, except those that reference an unavailable Radio Shack custom chip.

You're probably referring to the SSI-202 or one of its close cousins.
It's not a R-S custom chip, just one they were distributing for a
while. Last I checked, they were still available from B.G. Micro
(214-271-5546, Dallas) for less than $3. They also have (had?)
Crystal Semiconductor CS8870 decoders and a couple of flavors of
encoders, too.

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

69. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 21:21:45 UTC
From: tad@ssc.com
Message-ID: <1993Jul02.212145.139@ssc.com>
Source record: 120089
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.space

In article <C9I1vD.rCo@ns1.nodak.edu> msjurset@plains.NoDak.edu (Mark Sjurseth) writes:
> *INSTRUCTIONS*
>
>Follow these instructions EXACTLY, and in 20-60 days you will have received
>well over $50,000 in cash, all yours. This program has remained successful
>because of the honesty and integrity of the participants. Please continue
>its success by carefully adhering to the instructions.

Thanks, idiot....for posting your stupid and illegal chain letter scam.

>
>
>4) Within 60 days, you will receive approximately $50,000 in CASH. (Amounts
> will vary, of course) Keep a copy of this file for yourself so that you
> can use it again whenever you need money again. As soon as you mail out
>
>#2 Aaron Sprout
> 400 N River Rd. #1313
> West Lafayette, IN 47906
>
>#3 Brian Servis
> 400 North River Road #1435
> West Lafayette, IN 47906-3151
>
>#4 Marvin Ratchford
> 5801 Haines NE #44
> Albuquerque, NM 87110
>
>#5 Mark Sjurseth
> 2109 N. 2nd st.
> Fargo, ND 58102
>
>

If you want to complain, the US POSTAL INSPECTOR'S office that serves
Fargo is in Minneapolis. Call Heather at 612-293-3200, or fax
her at 612-293-3384.

Tell her you are complaining about MARK SJURSETH.

Feel free to call other postal inspection offices to complain about
other scam-artists on this list.

--
| tad@ssc.com (if it bounces, use 3288544@mcimail.com) |

| Tad Cook | Packet Amateur Radio: | Home Phone: |
| Seattle, WA | KT7H @ N7DUO.WA.USA.NA | 206-527-4089 |

70. Re: Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 23:15:34 UTC
From: dthomas@bbx.basis.com
Message-ID: <1993Jul2.231534.15478@bbx.basis.com>
Source record: 120088

hanner@sumax.seattleu.edu (Curtis Hanner) writes:

>I need help building a DTMF decoder. I can't seem to find a schematic
>anywhere, except those that reference an unavailable Radio Shack custom chip.

I know of two basic approaches. One: you can use that custom chip. That
way is very easy... all you have to do is hook up power and audio in to
the chip (and a crystal), and whenever incoming tones are detected,
the 4-bit code for that tone is strobed out. You can store this, display
it, or do whatever you need to from there.

The other way is to use 567 tone decoders. These are nifty little PLL
tone decoders (8 pin DIP ICs). Each 567 can detect only one tone. Since
touch tone signals are actually tone pairs, you'd need 7 chips (3 columns,
4 rows) to be able to decode all of the common touch tones, or 8 to get
the entire 4x4 matrix that the radio shack chip can get. (The other four
tones are usually labelled A,B,C,D and seldom do anything much!)

If you want to be able to watch a stream of digits go by, or record such
information, you'll need to be able to decode all of the tone pairs,
so you'd need either the custom chip or seven 567 chips plus logic.

However, if you're just doing an experiment with remote controls or somesuch,
you might be able to vastly simplify things. For instance, with just two
567s, you could detect the single tones representing rows 1-2-3 and 4-5-6
and use each to trigger some event.

If you decide that you really want that custom chip, I have saved a few
"just in case"! But it seems like somebody would offer such a chip today?

David

71. WANTED: schematics for simplex phone patch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-02 23:49:23 UTC
From: johann@nevada.edu
Message-ID: <1993Jul2.234923.11747@nevada.edu>
Source record: 120086

I am looking for schematics, or a source of them, to construct
a simplex phone patch for use with an Icom IC-28A (2m mobile).
The 28A is powered by a 20 amp reg. power supply.
There is no repeater.

I don't necessarily want to build this thing if anyone has one to
sell.

Jason Cathcart johann@nevada.edu N7OJN 146.88 LV,NV

--
johann@nevada.edu

72. small 2m Yagi

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-03 01:25:58 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Jul3.012558.11370@news.unomaha.edu>
Source record: 120087

Does anybody out there have schematics for a small (3-5 element) 2m Yagi?

Michael Fortner
ncc2001@cwis.unomaha.edu
N0???

73. Re: FM Transmitter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-03 01:31:15 UTC
From: tad@ssc.com
Message-ID: <1993Jul03.013115.3322@ssc.com>
Source record: 120091

In article <20pv3iINNq58@srvr1.engin.umich.edu> snark@paradox.engin.umich.edu (Mark VanAntwerp) writes:
>
>Dunno if this is the right group, but...
>
>
>Anyone have any plans for a short-range FM transmitter? Kinda like
>a "Mr. Microphone" type thing.
>

Check out the stereo FM transmitter from Ramsey. Its cheap, and it works great.

Ramsey Electronics
793 Canning Parkway
Victor, NY 14564

Phone: 716-924-4560
FAX: 716-924-4555

--
| tad@ssc.com (if it bounces, use 3288544@mcimail.com) |
| Tad Cook | Packet Amateur Radio: | Home Phone: |
| Seattle, WA | KT7H @ N7DUO.WA.USA.NA | 206-527-4089 |

74. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-03 15:02:04 UTC
From: rcanders@nyx.cs.du.edu
Message-ID: <1993Jul3.150204.23025@mnemosyne.cs.du.edu>
Source record: 120090
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.space

Please email comemnts to the person who started this thread, don't reply
in the news groups because he isn't reading the newsgroups.

If some jerk posts s__t like this to a newsgroup _never_ reply in the
newsgrou, just send email to the jerk.

--
Rod Anderson N0NZO | "I do not think the United States government
Boulder, CO | is responsible for the fact that a bunch of
rcanders@nyx.cs.du.edu | fanatics decided to kill themselves"
satellite N0NZO on ao-16 | Slick Willie the Compassionate

75. Re: Transmatch in Now you're Talking

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-03 21:18:39 UTC
From: root@jackatak.raider.net
Message-ID: <sPR56B5w165w@jackatak.raider.net>
Source record: 120092

i7994779@wsuaix.csc.wsu.edu (Patrick D. Walters) writes:

> In last year's "Now You're Talking on page 7-5 there is a picture of a
> transmatch and the diagram of the cicuit. What I am looking to know is how
> hard would that be to build, and what exactly would I need?
Well, for that circuit, as I recall, you'll need TWO "double banana
slicers" (split-stator) and some kind of variable inductor, roller or
tapped coil.
> I see the
> circuit and I understand what I am looking at (somewhat) but don't
> inductors come in sizes and the same thing for variable capacitors.
Yep. BIG works more combinations and handles more power than small or
medium... As long as you have settings to get "LOTS" of capacitance or
very little capacitance from the banana slicers, you should be able to
tune/cancel almost any inductive component, and similarly, if your
variable inductor has a fairly wide range, you should be able to
handle almost any "-J" sneaking done the antenna pipe. ;^)

When you see some ham with a table full of WIDE spaced (between the
plates) banana-slicers, and a roller inductor a bit larger than a
Pringles Chip can...try to talk him out of them. He'll want too much
money, so don't be afraid to walk away and come back later with a
still lower offer! The "Junque Fairy" rewards persistance, and seems
to sprinkle "discount dust" near the end of the 'Fest! ;^)

Good luck, and enjoy your project!
73

+--*--+
Jack GF Hill	Voice: (615) 459-2636 - Ham Call: W4PPT
P. O. Box 1685	Modem: (615) 377-5980 - Bicycling and SCUBA Diving
Brentwood, TN 37024	Fax: (615) 459-0038 - Life Member - ARRL
root@jackatak.raider.net - "Plus ca changer, plus ca la meme chose"
+--*--+

76. Re: Cheap preamp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-03 23:11:11 UTC
From: bwilkins@iat.holonet.net
Message-ID: <C9M32o.448@iat.holonet.net>
Source record: 120094
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew

dbraun@ilx049.intel.com (Doug Braun) writes:
:
: I noticed Radio Shack (and others) sell cheap ($30 with remote
: power supply)) mast-mounted
: pre-amps for TV use. I was wondering if these things work well
: enough to be useful for things like satellite reception.
: Would they be worth modifying? An obvious mod would be to
: add an input filter for the band of interest. Or perhaps the
: case could be cracked open and the RF amp transistor could
: be replaced with a better one? Has anyone tried this, or seen any magazine
: articles about this sort of thing?
:
: (Obviously it wouldn't do T/R switching, but that's OK)

These cheap devices lack the noise figure needed for weal signal operation.
Check the ads for <.5 noise figure. Most of the junk is >5.0

You really dont need the gain if you cant hear deeper into the noise. A
hundred dollars is cheap for a good receiver front end. You havent bought
anything for 39 dollars if the noise figure exceeds the receiver noise figure.

--
Bob Wilkins n6fri voice 440.250+ 100pl san francisco bay area
bwilkins@holonet.net packet n6fri @ n6eeg.#nocal.ca.usa.na

77. Re: MAKE.MONEY.FAST

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 02:12:50 UTC
From: jim@inqmind.bison.mb.ca
Message-ID: <4B656B1w165w@inqmind.bison.mb.ca>
Source record: 120093
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.spac

rcanders@nyx.cs.du.edu (Mr. Nice Guy) writes:

> Please email comemnts to the person who started this thread, don't reply
> in the news groups because he isn't reading the newsgroups.
>
> If some jerk posts s__t like this to a newsgroup _never_ reply in the
> newsgrou, just send email to the jerk.

Isn't that what he REALLY wants? Attention? Better that "the smart
people of this world" IGNORE HIM. Maybe he'll/it'll go away.

Jim
The opinions expressed are TOTALLY m'own and not of the sysops'.

jim@inqmind.bison.mb.ca
The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

78. field strength vs. watts out

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 05:26:14 UTC
From: brian@amdcl2.amd.com
Message-ID: <C9MKFr.K2u@amdcl2>
Source record: 120095
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

I'm interested in building a part 15 device (so it can be legally operated by non-hams), but I'm having difficulty understanding the power limits in part 15. I got a copy of the part 15 regs, and all of the power limitations are stated in microvolts per meter at N meters rather than as output power to some standard radiator. The basic reference books that I've checked (the ARRL handbook and antenna book) don't really discuss field strength as something to be measured on an absolute scale. I'm looking for a "rule of thumb" conversion from watts applied to an isotropic radiator (or dipole) to field strength at N meters so that my first pass at design will be within an order of magnitude of the allowed limit. Any pointers to info appreciated.

Thanks,
Brian McMinn N5PSS brian.mcminn@amd.com

79. advanced packet radio in Japan

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 11:54:23 UTC
From: jf7wex@jf7wex.sdj.miyagi.prug.or.jp
Message-ID: <4614.6379@jf7wex.sdj.miyagi.prug.or.jp>
Source record: 120096
Cross-posted to: rec.radio.amateur.packet,rec.radio.amateur.homebrew

Please allow me to write about our plans to experiment high speed digital
communication over radio in Japan.

TNC
We have a type of TNC named "TNC-Z", developed by Masaaki YONEZAWA
(JE1WAZ), using HD64180S(HITACHI), dedicated to kiss-mode.
It can handle up to 2Mbps differntial Manchester symbol (and NRZ/NRZI)
at radio port. Because it aims to be used for multi mode of radio,
only a outer MODEM is available.
PCB and diagram of TNC-Z have already distributed. Size of PCB is
4 x 3+3/8 (in inch).

FSK
We have already experimented 64Kbps at 1200MHz for several times.
At that time, a pair of IC-1200 is used for full-duplex.
(It is hard to work for the RIG as both TX and RX concurrently.)
The modulation was done directly at the VCO of the TX-RIG,
(Because of PLL and not scrambled, we concluded to use that symbol.)
and a small external circuit, using MC-3356P(MOTOROLA), which converts
IF of IC-1200 (136MHz) below into 10.7MHz, filter it, and shape
detected signal, for demodulation was prepared.
The book "High-speed Packet TNC" which describes V.27ter, V.29,
64Kbps FSK, and already distributed PCB at that time for them
has published with genny.or.jp, but sorry for only Japanaese edition
is available.

RF part was further improved to be independent component
separately from up-converter. The circuit and PCB, MC-2833P
(MOTOROLA) as TX-part, the same 3356P added local osc
(crystal controlled) and RF amp in as RX,
also including PTT(RTS) control and voltage regulator,
had developed by me.
This RF PCB will be orderd soon. Size of this PCB is
4+3/4 x 3 (in inch).

No filter was used at that experiments because digital filter was not
in time. Now, some prototypes have already built and evaluated.
All digital filters had developed by Shin'ichi KANNO, JN1JDZ.
He is selecting from among them and turning it to practical use.
Odering its PCB is in progress.

PSK (being planned out.)
Some kinds of suitable chip, dedicated to demodulate QPSK,
are supplyed for consumer products. A kind is for NICAM, about 750Kbps.
(728Kbps or 768Kbps??) Another is for also PCM audio channels of satelite

broadcasting, 2.048Mbps.
I found chips supplyed from TOSHIBA for each use, and from MICRONAS
(Finnish company) for NICAM.

Problem still lies in modulating. I know some groups using
looking-up EPROM and D/A, and existence of variously applicable chips,
useful for this purpose, from RF MICRO DEVICES.

I think demodulator must be composed cheap and simply, but modulator
is up to how construct. In case of using the RF-2802 or 2402,
containing 90 degrees hybrid phase splitter and two balanced mixers,
it is easy to do so. And the catalog says "Low Cost".
I am interested in using them. Anyone used? How much did it cost?

Protocol and software
We simultaniously reserch broadcasting-type protocol for scattering
USENET compatible news, amprnet-JA, over radio.

Ryuji Suzuki, JF7WEX.
Packet Radio User's Group, PRUG

80. Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 16:56:02 UTC
From: swamik@orca.ele.uri.edu
Message-ID: <C9nGDE.I8D@egr.uri.edu>
Source record: 120097

Hi
I would like schematics for a simple homebrew
20 or 40 mtr CW transceiver. (Xtal controlled).
How hard/easy is this and how much would it cost.
The rig should be QRP anywhere between 1-5 watts.
Could someone help me out. I have never built any kits
or homebrew equipment except for antennas.

TNX!!!!
de Swami (KB1AMB) swamik@orca.ele.uri.edu

81. Remote Station Control

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 17:46:06 UTC
From: "David C. Donley" <dd3u+@andrew.cmu.edu>
Message-ID: <4gBIRSW00YUo84gUw_@andrew.cmu.edu>
Source record: 120098

My previous request for information (on the .equipment group) about the Alinco DJ590/600 got the text of the manual mailed to me :-)

It seems that the 600 does come with subaudible decode, and the DTMF remote control seems like a really useful feature... Although very difficult to use. Three digit codes are required to select each radio function that often could be done by one button locally. Not to mention not being able to see the display.

I decided to get the Standard C5608DA 2M/70cm dual bander, because I have owned two standard HTs in the past and really liked them.

Once I was fooling with my lowly C= Amiga, and interfaced a DTMF decoder to it.

For testing and for fun, I recorded my voice into the computer saying the numbers 0-9 and the letters A-D. I wrote a program to play the appropriate sound sample when a DTMF code was received. I hooked the audio from the computer into a 2m transmitter into a dummy load, and the audio from my 440Mhz scanner into the DTMF decoder. I could now walk around and press buttons on my dual band HT and listen to myself recite numbers through the HT. (Not particularly useful)

If I were to figure out how to have the computer control a Standard C5808 dualbander through the mic input, I could write a program to control it using DTMF tones that would give me voice prompts so I could figure out what I was doing without having to look at the radio. Are there any FCC legal "gotchas" I would need to watch out for? (Would I have to get a repeater pair? :-)

Also, how difficult is it likely to be to figure out how the mic input control of the rig works?

David Donley
dd3u@andrew.cmu.edu
KD6ACL

82. Re: field strength vs. watts out

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 19:06:52 UTC
From: dave@llondel.demon.co.uk
Message-ID: <741838012snx@llondel.demon.co.uk>
Source record: 120099
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <C9MKFr.K2u@amdcl2> brian@amdcl2.amd.com (Brian McMinn N5PSS) writes:
> I'm interested in building a part 15 device (so it can be legally
> operated by non-hams), but I'm having difficulty understanding the
> power limits in part 15. I got a copy of the part 15 regs, and all of
> the power limitations are stated in microvolts per meter at N meters
> rather than as output power to some standard radiator. The basic
> reference books that I've checked (the ARRL handbook and antenna book)
> don't really discuss field strength as something to be measured on an
> absolute scale. I'm looking for a "rule of thumb" conversion from
> watts applied to an isotropic radiator (or dipole) to field strength
> at N meters so that my first pass at design will be within an order of
> magnitude of the allowed limit. Any pointers to info appreciated.
>
As a rough guide, you can work out the power density and use the normal

Power = Volts*Volts/Resistance where the resistance is assumed to be
377 ohms (impedance of free space). To get the power density you just
work out the surface area of a sphere of the required radius and divide
it by the power. You obviously need to allow for any gain which your
radiating element might have. Note that other things can affect the accuracy
of the above because it really only applies to an isotropic radiator in
free space.

Dave

****
* G4WRW @ GB7WRW.#41.GBR.EU AX25 * You think *you* have problems? *
* dave@llondel.demon.co.uk Internet * What do you do if you *are* *
* g4wrw@g4wrw.ampr.org Amprnet * a manically depressed robot?? *
****

83. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-04 22:14:26 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <C9nv42.8Ms@news.Hawaii.Edu>
Source record: 120100

In article <C9nGDE.I8D@egr.uri.edu> swamik@orca.ele.uri.edu (Swami Kumaresan) writes:
>Hi
> I would like schematics for a simple homebrew
> 20 or 40 mtr CW transceiver. (Xtal controlled).
> How hard/easy is this and how much would it cost.
> The rig should be QRP anywhere between 1-5 watts.
> Could someone help me out. I have never built any kits
> or homebrew equipment except for antennas.
>
> TNX!!!!
> de Swami (KB1AMB) swamik@orca.ele.uri.edu

Gang,
I've got a bunch of circuit diagrams for easy-to-built HF xmtrs using
junkbox parts which I will eventually post on here once I can provide some
nice schematic drawings - kind of difficult doing that on this keyboard...
Stay tuned...

Jeff, NH6IL

84. Re: field strength vs. watts out

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 03:07:55 UTC
From: markz@ssc.com
Message-ID: <1993Jul05.030755.5388@ssc.com>
Source record: 120101
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

Brian McMinn N5PSS (brian@amdcl2.amd.com) wrote:
: I'm looking for a "rule of thumb" conversion from
: watts applied to an isotropic radiator (or dipole) to field strength
: at N meters so that my first pass at design will be within an order of
: magnitude of the allowed limit. Any pointers to info appreciated.

Eo = sqrt(30 * Gt * Pt)/r where Eo is field strength, Gt is antenna
power gain (the actual ratio, not dB), Pt is power (watts),
and r is radius (meters).

The best write-up that I've got is chapter 6 (Propogation) in
the "Television Engineering Handbook" by K. Blair Benson.
(McGraw-Hill, 1986).

Also covered in "Reference Data For Radio Engineers" from Sams, and
buried somewhere in "The ARRL Antenna Book".

Mark Zenier markz@ssc.wa.com markz@ssc.com

85. 455khz IF filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 03:55:49 UTC
From: segrest@bobseg.enet.dec.com
Message-ID: <2188o5$5n6@sousa.ako.dec.com>
Source record: 120102

I am interested in expanding the receive bandwidth of a commercial radio. The 455khz IP filter currently has a bandwidth of 12.25 khz and I would like to locate or build a filter with a significantly wider bandwidth. Has anyone out there had any experience with this kind of project?

--
Bob Segrest
segrest@bobseg.enet.dec.com

86. Re: 455khz IF filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 12:23:07 UTC
From: wout@dutentb.et.tudelft.nl
Message-ID: <1993Jul05.122307.29517@donau.et.tudelft.nl>
Source record: 120103

Bob Segrest writes

>I am interested in expanding the receive bandwidth of a commercial radio. The
>455khz IP filter currently has a bandwidth of 12.25 khz and I would like to
>locate or build a filter with a significantly wider bandwidth. Has anyone out
>there had any experience with this kind of project?

Wel Bob,

You have two possibilities:

either you can simply replace the IF filter by a short circuit (for AC, not for DC, thus use a capacitor. 1 nF will do nicely). In most cases
the IF filter is preceded by some active stages that use a resonating
transformer in between. They will perform your filtering action.

or you can replace the filter by an ordinary LC filter.

Wouter/PD0NRP

PS. be aware of the correct impedance at both filter terminals !

87. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 17:18:21 UTC
From: agodwin@acorn.co.uk
Message-ID: <24700@acorn.co.uk>
Source record: 120104

In article <211m6aINNplq@newsstand.cit.cornell.edu> fkf1@cornell.edu (F. Kevin Feeney) writes:
>
>Hi, I just dropped into this thread but it looks like something I have
>been curious about. I've got a pair of gunn diode oscillators that I
>picked up for experimenting with at the Rochester NY hamfest. I'd be
>content to do anything interesting with them (other than light up my
>radar detector, did that during checkout) - but what I'd really like to
>know is how do people use them to transmit ATV? We have an ATV repeater
> ..
>onto it and demod it back off? I've briefly seen one of the british
>articles (while browsing a book) and it looks like just voltage
>modulating the gunn diode for FM, but I'm not as clear what you use at
>the other end for a receiver. Both my units have mixer diodes in them, I
>think at right angles.
>
>Anyway, can anyone point me at some of these TV applications? Thanks.

The BATC articles I mentioned use the same method as the ARRL handbook's descriptions of a voice system and a data system - they use another gunn/mixer module to receive downconvert the signal, with the gunn diode acting as a first local oscillator. They then demodulate the result with an FM demodulator designed for a 1.2GHz system - I think the first IF is at 1.2 GHz, but I may have that wrong. This means that they havbe to be careful not to let the L.O. signal from the RX escape, as it would be out of band. They also use a home-built diode mount for the mixer diode, I think because the capacitance of the mount in a Solfan head is too large for the 1.2 GHz signal they're trying to get out of it.

However, this simple approach for a receiver isn't so popular now - with the wide availability of surplus satellite RX gear, the newer method is to modify an LNB converter (by changing the DRO) so the downconverted amateur band is in the range of a commercial satellite TV receiver (950 - 1750 MHz in the UK). This setup is described in the BATC Compendium.

This is probably more expensive than the Gunn solution, but gives very much better RX performance. With a second-hand satellite receiver and a surplus LNB, it can be pretty cheap, too.

-adrian

88. Re: Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 19:13:43 UTC
From: bobw@col.hp.com
Message-ID: <219uh7$54c@hp-col.col.hp.com>
Source record: 120105

dthomas@bbx.basis.com (Dave Thomas) writes:
> hanner@sumax.seattleu.edu (Curtis Hanner) writes:
>
> I know of two basic approaches. One: you can use that custom chip. That
> way is very easy... all you have to do is hook up power and audio in to
> the chip (and a crystal), and whenever incoming tones are detected,
> the 4-bit code for that tone is strobed out. You can store this, display
> it, or do whatever you need to from there.
>
> The other way is to use 567 tone decoders. These are nifty little PLL
> tone decoders (8 pin DIP ICs). Each 567 can detect only one tone. Since
> touch tone signals are actually tone pairs, you'd need 7 chips (3 columns,
> 4 rows) to be able to decode all of the common touch tones, or 8 to get
> the entire 4x4 matrix that the radio shack chip can get. (The other four
> tones are usually labelled A,B,C,D and seldom do anything much!)
>
No, don't use the 567 approach. OK, maybe if you have a pile of them
in your junk box. Maybe if you only want to decode one or two digits.
And it doesn't have to work over temperature. And you don't mind it
falsing on voices or other audio. Or maybe you don't mind setting
the lock time on the 567's about a second or two to avoid falsing
problems.

The real DTMF decoders available these days are so good and affordable.
Use them.

Bob KB0CY

89. Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-05 22:39:13 UTC
From: wisznie@ecf.toronto.edu
Message-ID: <C9pqxF.4G3@ecf.toronto.edu>
Source record: 120106

The following is for a friend of mine:

I have a question to all of you designers/builders out there. I am in the process of building a high current power supply for my TS440S and I need to know which of the following will provide me with a greater current output. The transformer I've got has a 55 VAC secondary and a center tap, so in effect I've got 27.5 VAC sitting between the center tap and each of the two outer terminals. Here are the two choices:

1. Bridge rectifier? I'd stick a bridge rectifier between the center tap and one of the outer terminals which, in effect, would be rectifying 27.5 VAC provided by one half of the transformer?

or

2. Full wave center tap rectifier? I'd ground the center tap and pass each of the two outer terminals through a diode (anode facing the transformer) and tie the diodes together at their cathodes?

I would appreciate any info anybody can provide. I also welcome any other hints and ideas that'll help me get the most out of my transformer.

Thanx es 73 de Alex VE3GOP

90. Ceramic IF filter F455P, what is P?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 06:58:41 UTC
From: wout@dutentb.et.tudelft.nl
Message-ID: <1993Jul06.065841.12862@donau.et.tudelft.nl>
Source record: 120108

Hi,

Does anybody know the 'code' of ceramic IF filters?
I have one that has 'F455P' on its body. Clearly, 455 stands
for 455 kHz. But what about the F, and, in particular, the P?

Any ideas?

Best 73s, Wouter/PD0NRP

91. Re: Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 09:56:06 UTC
From: wvanhorn@magnus.acs.ohio-state.edu
Message-ID: <21bi7m$h73@charm.magnus.acs.ohio-state.edu>
Source record: 120107

Alex -

You said it all when you said a bridge rectifier across half the secondary would produce current from HALF of the winding. That would not use the other half, so would reduce the total output available to you. The full-wave rectifier is decidedly your best option.

But you will end up with something over 35 volts d.c. whereas your TS-440 requires a nominal 13.8 volts (min. 12 v., max. 16 v.). I don't know of any efficient way of dropping the d.c. voltage to the range you need.

Examine your transformer closely. How difficult would it be to dis-assemble it and rewind the secondary? The primary winding is usually wound first on the coil form, with the secondary on the outside. The secondary wire is heavier gauge, hence easier to handle. Most stepdown transformers are easy to rewind to a different output voltage.

Just count the number of turns on the secondary as it is, and divide 55 volts by that number. The quotient is the turns-per-volt of the transformer as it is now wound. If you leave the primary as it is, that will not change. To get the output voltage you want, you just wind the number of turns you need. The limit to the output power you can draw is based on the total magnetic flux the core iron can carry, which is determined by its size (cross-section area). If it can safely deliver 200 watts at 55 volts now, it will be able to deliver 200 watts at 12 volts, if the secondary wire is big enough to carry the current.

You could rewind the secondary using the same wire that you remove, by winding it bifilar (i.e. two wires side-by-side) hooked in parallel. Depending on how much wire you lose in removing it (if any) and the amount you will necessarily have to use in the leads to and from the coil, you should have enough to wind sufficient turns to get 24 volts a.c., which is about what you want. With a full-wave rectifier and capacitive filter, that will give you a bit over 16 volts d.c. at no load. That will drop under full load to near the middle of the specified range. To insulate the secondary from the primary winding, you may be able to use the resin-soaked paper that it probably now contains. If not, a single layer of "electrical tape" will be plenty. Don't use more because you may have problems getting all the wire wound into the space available inside the core. Wind the wire as evenly and tightly as you can and you will probably be able to fit it all in.

Good luck!

Van - W8UOF
wvanhorn@magnus.acs.ohio-state.edu

92. Heated rear window antenna

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 13:11:25 UTC
From: N.H.Thomas@cs.bham.ac.uk
Message-ID: <C9qvB2.tI@cs.bham.ac.uk>
Source record: 120112

In my car,
for connecting a VHF reciever to the heated rear window circuit,
I think I need a DC decoupling capacitor.

My problem is that I dont know what sort of capacitor to use
e.g. tantanium, polyester etc.
voltage rating (perhaps large enough to allow for inducive surge)
amount of capacitance (not a clue).

Any suggestions?
--
Email: N.H.Thomas@cs.bham.ac.uk G7ABW
Work: Fax: 021 414 4281 Tel: 021 414 3736
Home Tel: 021 454 5729
Snail: 21/136 The Tennis Court, Edgbaston Park Rd, Edgbaston, Birmingham B15 2RB

93. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 13:33:57 UTC
From: bal@controls.ccd.harris.com
Message-ID: <1993Jul6.133357.11270@ccd.harris.com>
Source record: 120109

Swami Kumaresan (swamik@orca.ele.uri.edu) wrote:
: Hi
: I would like schematics for a simple homebrew
: 20 or 40 mtr CW transceiver. (Xtal controlled).
: How hard/easy is this and how much would it cost.
: The rig should be QRP anywhere between 1-5 watts.
: Could someone help me out. I have never built any kits
: or homebrew equipment except for antennas.

: TNX!!!!
: de Swami (KB1AMB) swamik@orca.ele.uri.edu

Check out the July 93 issue of CQ. They are featuring a 6 part
40 meter QRP rig!

--
Bruce Lifter ....
blifter@ccd.harris.com KD4WLF/AA
---

94. "A BC-Band energy-Rejection Filter" project in the ARRL Handbook

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 14:35:15 UTC
From: kc6sss@catnip.berkeley.ca.us
Message-ID: <6326@catnip.berkeley.ca.us>
Source record: 120110

It works!

I couldn't find Mallory SXM polystyrene caps for the life of me, but
I did manage to find polystyrene caps at a local electronics surplus
place.

So, after having the components for over two years, I finally got
around to hooking them all together yesterday, drilling and nibbling
holes out for UHF connectors in my project box, and so on.

Yesterday, 5/6/93 was the first time I had been able to hear
WWV on 5, 10, 15 and 20MHz all at the same time. Admittedly, 20MHz
was really weak, but the ticks were there.

Now, from the description, it seems as if one might be able to transmit
through this, using it as a filter to get rid of spurs that your transmitter
may have in the broadcast band. Does anyone know about this?

Thanks
andy

95. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 15:31:56 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <21c5tcINN2f9@newsstand.cit.cornell.edu>
Source record: 120111

In article <24700@acorn.co.uk> Adrian Godwin, agodwin@acorn.co.uk writes:
>The BATC articles I mentioned use the same method as the ARRL handbook's
>descriptions of a voice system and a data system - they use another
>gunn/mixer module to receive downconvert the signal, with the gunn diode
>acting as a first local oscillator. They then demodulate the result with
>an FM demodulator designed for a 1.2GHz system - I think the first IF is
>at 1.2 GHz, but I may have that wrong. This means that they havbe to be
>careful not to let the L.O. signal from the RX escape, as it would be
>out of band. They also use a home-built diode mount for the mixer diode,
>I think because the capacitance of the mount in a Solfan head is too
>large for the 1.2 GHz signal they're trying to get out of it.
>
>However, this simple approach for a receiver isn't so popular now -
>with the wide availability of surplus satellite RX gear, the newer
>method is to modify an LNB converter (by changing the DRO) so the
>downconverted amateur band is in the range of a commercial satellite
>TV receiver (950 - 1750 MHz in the UK). This setup is described in the
>BATC Compendium.
>
>This is probably more expensive than the Gunn solution, but gives very
>much better RX performance. With a second-hand satellite receiver and
>a surplus LNB, it can be pretty cheap, too.
>
>-adrian

Hmm, that was about what I thought people might be doing. Unfortunately I am woefully undereducated about what is in the typical satellite systems - what's a DRO? And where can one get copies of the BATC articles? I've seen a lot of satellite stuff going pretty cheap, and I don't need anything real fancy - so this might be a good route to go.

On another tack, when you modulate the supply of a gunn diode, do you get simultaneous am and fm modulation? The reason I ask is, would a gunnplexer type situation work with a regular tv receiver as the IF? If there were enough AM signal, then the receiver might pick it up. I'm sure that downconverting with an LNB would work well, but I'm looking for simple things to mess with first. I'm only trying to shoot video over about a 1 mile LOS path. Also, if you picked a low enough channel both ends of the link should be in the amateur band with the gunnplexer type operation (although I only need a one way link).

Course I suppose I could also look at cheap ways to make AM signal on 900 or 1.2 Ghz - they might be simpler than messing with Gunn Oscillators for this specific application.

Kevin WB2EMS (fkf1@cornell.edu)

96. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 16:36:20 UTC
From: dthomas@bbx.basis.com
Message-ID: <1993Jul6.163620.18271@bbx.basis.com>
Source record: 120115

swamik@orca.ele.uri.edu (Swami Kumaresan) writes:

> I would like schematics for a simple homebrew
> 20 or 40 mtr CW transceiver. (Xtal controlled).

My friend Bob built a 40m CW transmitter only, using a 6146 tube as a xtal oscillator. It put out about 20 Watts and we worked a station 2,000 miles away within five minutes of getting it working.

It was a very simple circuit (just an oscillator) but it did require the old-style, big crystals. If this is of interest, I'll try and find Bob and see if he still has the circuit.

David

97. Re: "A BC-Band energy-Rejection Filter" project in the ARRL Handbook

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 18:08:40 UTC
From: jholly@cup.hp.com
Message-ID: <C9r92H.6t9@cup.hp.com>
Source record: 120113

Andy (kc6sss@catnip.berkeley.ca.us) wrote:
: It works!

: I couldn't find Mallory SXM polystyrene caps for the life of me, but
: I did manage to find polystyrene caps at a local electronics surplus
: place.

: So, after having the components for over two years, I finally got
: around to hooking them all together yesterday, drilling and nibbling
: holes out for UHF connectors in my project box, and so on.

: Yesterday, 5/6/93 was the first time I had been able to hear
: WWV on 5, 10, 15 and 20MHz all at the same time. Admittedly, 20MHz
: was really weak, but the ticks were there.

: Now, from the description, it seems as if one might be able to transmit
: through this, using it as a filter to get rid of spurs that your transmitter
: may have in the broadcast band. Does anyone know about this?

: Thanks
: andy

The idea works fine..For a number of years I had a pickup with a 5/8's wave
vertical for two meters. I used that antenna for the BC and FM radio also, in
addition for the 10-watt two meter rig. I ran coax from the antenna to the
coupler box, coax to the two meter rig and regular BC cable to the radio.
I think Antenna Specialist makes a coupler for this application, but I built
mine. Of couse if you are going to run any serious power you might want to
protect the BC front end...

73, Jim, WA6SDM
jholly@cup.hp.com

98. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 18:35:28 UTC
From: glenne@sr.hp.com
Message-ID: <C9rAB5.5B8@srgenprp.sr.hp.com>
Source record: 120114

: - what's a DRO?

Dielectric Resonator Oscillator

: On another tack, when you modulate the supply of a gunn diode, do you get
: simultaneous am and fm modulation? The reason I ask is, would a

Yes. See plots in my 1988 Ham Radio Magazine design series of a typical
oscillator's power/freq/bias performance. I measured a fair number and
presented an average.

: gunnplexer type situation work with a regular tv receiver as the IF? If
: there were enough AM signal, then the receiver might pick it up. I'm sure

I think that the author of the "Gunn Diode Cookbook" (or similar
title) was delighted to find that he could demodulate frequency
modulated (low mod index I'm sure) Gunn oscillators on a standard TV
set. He seemed to feel that he had made a discovery though I expect
that this is similar to demodulating low index/deviation nbfm on an SSB
receiver. For low modulation indices there is mainly only one set of FM
sidebands, which can be recovered with AM techniques.

I don't think you'll get enough AM for a straight AM approach to work
very well. You would probably do better to up/down-convert a vhf or uhf
TV signal. Again see the Ham Radio Mag series and the references to
wideband operation of the narrowband equipment.

: that downconverting with an LNB would work well, but I'm looking for
: simple things to mess with first. I'm only trying to shoot video over
: about a 1 mile LOS path. Also, if you picked a low enough channel both
: ends of the link should be in the amateur band with the gunnplexer type
: operation (although I only need a one way link).

VHF NTSC video and the mixer I show should work. Either that or you
could build the entire phaselocked system, along with waveguide filter,
and substitute the video for the 280-290 MHz multimode IF. That's probably
overkill for what you want though. You should be able to get >10 miles
with 2' dishes at each end. The 2 Mbps data link I build would do about
40 miles over more than a 1 MHz bandwidth and > 20 dB C/N. You should
do very well over 1-2 miles. The path will need to be truly LOS though.
No "almost" or "2 meters works well".

: Course I suppose I could also look at cheap ways to make AM signal on 900
: or 1.2 Ghz - they might be simpler than messing with Gunn Oscillators for
: this specific application.

It's probably easier to convert an existing NTSC signal than it is to worry about building a suitable (linear, acceptable loss etc) AM modulator though it could be done. You might be able to make do with one of the modular linear PA assemblies, 10-25 watts, which are available for 1200 M. The Mitsubishi M57762 parts come to mind. They have a bias input which is used for linear service and can provide a degree of gain/power control. This "gain control" isn't perfectly linear but you might be able to get by over a limited range. There is also a lower power driver/HT part which works similarly at 2-3 watts.

73
Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

99. Re: Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 19:07:12 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseC9rBs1.9uC@netcom.com>
Source record: 120116

In article <21bi7m$h73@charm.magnus.acs.ohio-state.edu> wvanhorn@magnus.acs.ohio-state.edu (William E Van Horne) writes:
>Examine your transformer closely. How difficult would it be to dis-
>assemble it and rewind the secondary? The primary winding is usually
>wound first on the coil form, with the secondary on the outside. The
>secondary wire is heavier gauge, hence easier to handle. Most stepdown
>transformers are easy to rewind to a different output voltage.
>
>You could rewind the secondary using the same wire that you remove,
>by winding it bifilar (i.e. two wires side-by-side) hooked in parallel.

You *might* be able to just split the secondary winding at the center tap. You may see 2 heavy wires leading from the windings to the center tap terminal, or if you dig in a little under the outside wrap of insulation to a point where the magnet (enamel coated wire) connects to a regularly insulated wire. disconnect the 2 magnet (winding) wires. If you're lucky, the manufacturer used the same number of turns for both sides of the center tap. Using a VOM, determine which of the now freed center tap wires are continious with which ends of the secondary. Connect one of the old center tap wires to the other now independent winding. Careful that you don't short out a winding! Using a fuse in the powerline supply, power up the transformer. Select the fuse to blow if a secondary is shorted, but not to blow when you first connect the transformer. (divide power by 120 to get amp rating, the rated power the transformer is suppose to deliver). Now measure voltage between the two unconnected winding ends, should be close to or at zero. Also measure across one winding to verify that power is really being applied to the transformer. If the winding difference is below, say 1/4? 1/10? or so volts, you should be able to join the two ends together. Let the transformer run for some time, checking after a few seconds, then a minute, then 10 minutes, 1/2 hour, hour to see if it gets any hotte than it used to before you joined the windings. If not any hotter, than you have 1/2 voltage at twice the amps.

```
----- || -----a
} || {
} || -----b
} || -----c
} || {
----- || -----d
```

b and c were old center tap. seperate. connect a to c, then test for 0 volts between b and d. If so, connect b and d, check if xformer gets any hotter than before when idling (no load both tests)

100. Re: Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-06 20:05:05 UTC
From: alanb@sr.hp.com
Message-ID: <C9rEGJ.7JM@srgenprp.sr.hp.com>
Source record: 120117

WISZNIEWSKI SEBASTIAN (wisznie@ecf.toronto.edu) wrote:
: The following is for a friend of mine:

: I have a question to all of you designers/builders out there. I am in the
: process of building a high current power supply for my TS440S and I need
: to know which of the following will provide me with a greater current
: output. The transformer I've got has a 55 VAC secondary and a center
: tap, so in effect I've got 27.5 VAC sitting between the center tap
: and each of the two outer terminals. Here are the two choices:

: 1. Bridge rectifier? I'd stick a bridge rectifier between the center
: tap and one of the outer terminals which, in effect, would be
: rectifying 27.5 VAC provided by one half of the transformer?

: or

: 2. Full wave center tap rectifier? I'd ground the center tap and pass
: each of the two outer terminals through a diode (anode facing the
: transformer) and tie the diodes together at their cathodes?

To a first-order approximation, it wouldn't make any difference.
With the bridge, half the winding is conducting 100% of the time.
With the center-tap full-wave rectifier, each half of the winding is
conducting 50% of the time. The total I^2 R loss is the same.

I think I would use the center-tap full wave. That would distribute
the power loss over both windings, which might reduce the temperature
rise somewhat. Also it only requires 2 diodes instead of 4.

An even better solution would be if you can separate the center tap
connection so you get two separate windings. Wire them in parallel
into a full-wave bridge. Now both windings are conducting 100% of
the time, which will reduce I^2 R loss by 50%. (No effect on core
loss, however.)

By the way, 27.5V RMS is way too high for a 12V regulator. It will
likely put out over 35V DC. About half of that would be right for
minimum pass transistor dissipation. If the primary winding is set
up to allow 220V operation, you could try running it that way, but
off of 110VAC.

AL N1AL

101. Re: 455khz IF filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-07 13:34:12 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <rdewan.742052052@news.acns.nwu.edu>
Source record: 120018

In <2188o5$5n6@sousa.ako.dec.com> segrest@bobseg.enet.dec.com () writes:

>I am interested in expanding the receive bandwidth of a commercial radio. The
>455khz IP filter currently has a bandwidth of 12.25 khz and I would like to
>locate or build a filter with a significantly wider bandwidth. Has anyone out
>there had any experience with this kind of project?

Here is info on Murata-Erie ceramic filters. It is from their catalog
and was mailed to me by some one a while ago.

| 6db | Att. |Stop Band Att. Insertion |in./Output
| | | _| Loss |
Part Number | | | (db) min | (db)max | Impedance
| | Band Width| Band Width| | | | Ohms
SFG | SFH | (KHZ)min. | (khz)max | SFG | SFH | SFG | SFH||
SFG455B|SFH455B | =+ 15 | -+ 35 | 25 | 35 | 5 | 6 | 1500
SFG455C|SFH455C | -+ 12.5 | -+ 30 | 25 | 35 | 6 | 7 | 1500
SFG455D|SFH455D | -+ 10 | -+ 25 | 23 | 35 | 7 | 8 | 1500
SFG455E|SFH455E | -+ 7.5 | -+ 20 | 23 | 35 | 8 | 9 | 1500
SFG455F|SFH455F | -+ 6 | -+ 17.5 | 23 | 35 | 9 | 10 | 2000
SFG455G|SFH455G | -+ 4.5 | -+ 15 | 20 | 35 | 10 | 13 | 2000
---
* Stop band attenuation is specified within 455 -+ 100 khz(whereas SFG455G/B:
whitin -+ 80 khz)
*Attenuation band width is specified at the width of SFG: 45 db. SFH: 50 db.

I replaced a 455E with 455C in a 70cm band radio for 9600 baud packet use.
These are pretty standard but do have significant part to part variations.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

102. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-07 16:27:53 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-742062461@unomaha.edu>
Source record: 120019
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
===========================

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

103. Re: Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-08 01:13:43 UTC
From: alanb@sr.hp.com
Message-ID: <C9tnEw.8yy@srgenprp.sr.hp.com>
Source record: 120020

Alan Bloom (alanb@sr.hp.com) wrote:

: To a first-order approximation, it wouldn't make any difference.
: With the bridge, half the winding is conducting 100% of the time.
: With the center-tap full-wave rectifier, each half of the winding is
: conducting 50% of the time. The total I^2 R loss is the same.

Actually, with a capacitor-input filter, the diodes conduct much
less than 50% of the time. What I should have said is that, with a
bridge, the winding conducts twice per cycle; with a center-tapped
full-wave rectifier, each half winding conducts once per cycle.
My conclusions are still valid, however.

AL N1AL

104. non-relay TR switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-08 02:05:13 UTC
From: jsteinhu@nyx.cs.du.edu
Message-ID: <1993Jul8.020513.3765@mnemosyne.cs.du.edu>
Source record: 120021

I am looking for the plans to a TR switch (to be used in a 2m amp. it will have to deal with up to 25w) that doesn't use a relay. (i.e. I want semi-high speed switching as well as a long life.) Any plans , referances to plans or tips are welcome.
73 N1MAM

--
jsteinhu@nyx.cs.du.edu

105. CIRCAD libraries

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-08 12:40:40 UTC
From: sdeadmin@sni.co.uk
Message-ID: <1993Jul8.124040.27794@sni.co.uk>
Source record: 120022

Hi,
Does anyone have any libraries that they have built up for
CIRCAD that they would like to share? RF stuff in particular.
Is there anyone using CIRCAD for their homebrew?

73's
Lehane
--
Lehane Kellett. G8KMH. Siemens Nixdorf Information Systems, Bracknell.
lehane@sni.co.uk
Standard disclaimers apply. Warranty void if opened.

106. Re: non-relay TR switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-08 19:28:05 UTC
From: smith@sauron.sps.mot.com
Message-ID: <1993Jul8.192805.4133@newsgate.sps.mot.com>
Source record: 120023

>I am looking for the plans to a TR switch (to be used in a 2m amp. it will
>have to deal with up to 25w) that doesn't use a relay. (i.e. I want
>semi-high speed switching as well as a long life.) Any plans , referances
>to plans or tips are welcome.
>73 N1MAM

I built a 40w 2m amp back in the 70's that used 2 lengths of RG-174 or similar miniature co-ax and 8 pin diodes.

I think the length was about 36" per piece.The theory was that received RF did not drive the diodes into conduction and when the Tx rf switched the diodes it presented a high impedance etc. I forget the precise details but it worked very well.

Maybe someone else has the info but if not I'm sure I have the design buried deep deep in my archives - could be a while before I find it.

73 Trevor G3WQO AB5EU

107. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-08 19:37:36 UTC
From: edmitch@microsoft.com
Message-ID: <1993Jul08.193736.6071@microsoft.com>
Source record: 120024

I strongly recommend the "Spider" SP-1 QRP CW Transceiver kit. It was described earlier this year (March?) 73 magazine. The complete kit, including PCB, parts, box, etc, is available for about $45.00. The instructions are very clear and the unit is easy to build. You can build the basic kit for either 80m, 40m or 30m. It uses fundamental frequency crystals.

I built mine for 40m and have worked up and down the west coast (1500 miles) on 1 watt, getting 579 reports. For those times when the band is dead or QRM is bad, I also built a 10 w amp later.

I'm writing this in the office and I don't have the mailing address for where you can obtain this rig. Best bet is to write me at my home email address:
edmitch@aol.com
where I'll be able to look it up. (Well, sorta, we just moved last weekend - I think I know where the info's located so its worth a try!)

Ed Mitchell
KF7VY
Issaquah WA

108. Cellular phones for 902 MHz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 12:03:16 UTC
From: regnad@gnu.ai.mit.edu
Message-ID: <21jmq4INNo68@life.ai.mit.edu>
Source record: 120025

It's occured to me that cellular phones should be adaptable to the 902 MHz band without too much effort. Does anyone have any info on this?
(I am talking about more or less wholesale conversion of available "phones" i.e. transceivers. Not just scavenging a few parts.)

Paul Prescott
N1AAC
regnad@gnu.ai.mit.edu

109. Re: non-relay TR switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 13:38:37 UTC
From: rhealy@arrl.org
Message-ID: <1698@arrl.org>
Source record: 120026

In rec.radio.amateur.homebrew, smith@sauron.sps.mot.com (Trevor Smith) writes:
>
>>I am looking for the plans to a TR switch (to be used in a 2m amp. it will
>>have to deal with up to 25w) that doesn't use a relay. (i.e. I want
>>semi-high speed switching as well as a long life.) Any plans , referances
>>to plans or tips are welcome.
>>73 N1MAM
>
>I built a 40w 2m amp back in the 70's that used 2 lengths of RG-174 or similar
>miniature co-ax and 8 pin diodes.
>
>I think the length was about 36" per piece.The theory was that received RF
>did not drive the diodes into conduction and when the Tx rf switched the
>diodes it presented a high impedance etc. I forget the precise details but
>it worked very well.

Several years ago, when he wrote the >50 column in QEX, Bill Olson, W3HQT, published a circuit like this. I believe that he used microstrip transmission lines instead of coax, but the design is otherwise what Trevor describes above. Bill Olson runs Down East Microwave in Troy, Maine. His telephone number is 207-948-3741. Check with him for more details. If pressed, I can look up the article in our archives.

--73, Rus

Rus Healy, NJ2L rhealy@arrl.org
Senior Assistant Technical Editor, QST Tel 203-666-1541
ARRL, 225 Main St, Newington CT 06111-1494 Fax 203-665-7531
1.8 through 3456 MHz -- and climbing!

110. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 14:44:14 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <C9wJLx.Jnn@cbnewsm.cb.att.com>
Source record: 120027

In article <C9nv42.8Ms@news.Hawaii.Edu> jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman) writes:
>In article <C9nGDE.I8D@egr.uri.edu> swamik@orca.ele.uri.edu (Swami Kumaresan) writes:
>>Hi
>> I would like schematics for a simple homebrew
>> 20 or 40 mtr CW transceiver. (Xtal controlled).
>> How hard/easy is this and how much would it cost.
>> The rig should be QRP anywhere between 1-5 watts.
>> Could someone help me out. I have never built any kits
>> or homebrew equipment except for antennas.
>
>Gang,
> I've got a bunch of circuit diagrams for easy-to-built HF xmtrs using
>junkbox parts which I will eventually post on here once I can provide some
>nice schematic drawings - kind of difficult doing that on this keyboard...
>Stay tuned...

Makes me wonder how hard it would be to scan the various schematics
and save them as pcx or gif files. Where upon we could put them in a
central location so that all could download them. I don't have a scanner
otherwise I would try this right away. 8-) Of course, at some of the sizes
that I have seen them printed at it might not turn out that great.
73!

Jeff

--
Jeff Jones AB6MB | OPPOSE THE NORTH AMERICAN FREE TRADE AGREEMENT!
jeffj@seeker.mystic.com | Canada/USA Free Trade cost Canada 400,000 jobs.
Infolinc BBS 415-778-5929 | Want to guess how many we'll lose to Mexico?

111. commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 16:27:16 UTC
From: j_otterson@otters.enet.dec.com
Message-ID: <1993Jul9.162716.17540@nntpd.lkg.dec.com>
Source record: 120028

Here is a technical question for the PLL/Frequency Synthesizer wizards who I just know are out there... Admittedly, this is not a completely "homebrew" question, but I expect that the mods that will need to be done will get it pretty close.

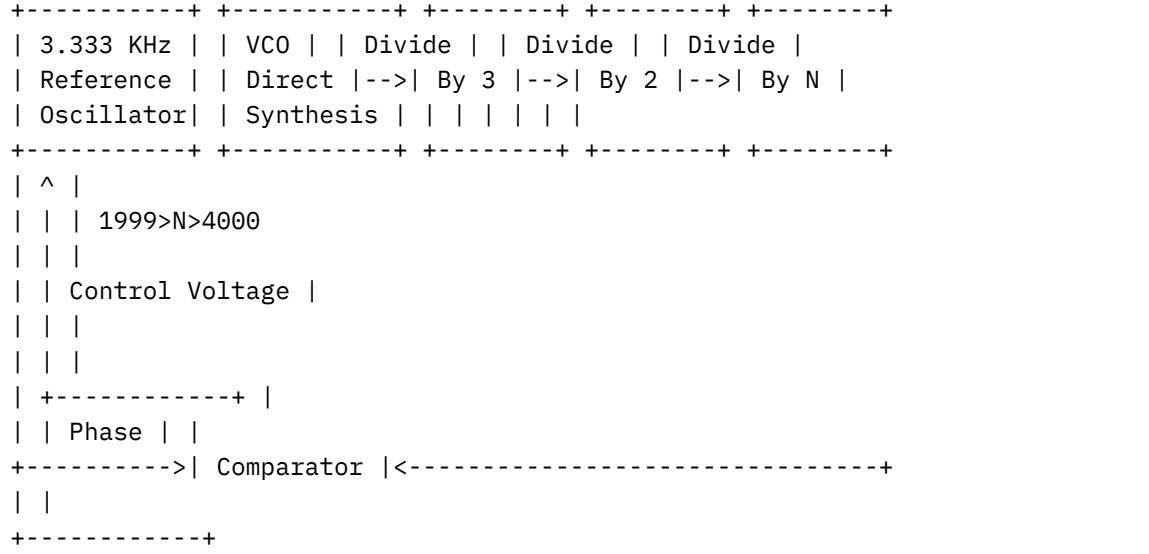
At the Flea last fall, a few folks I know (including myself) bought some Standard Radio C966L VHF Lo-band Mobile Commercial Radios, with the intent of using them on 6. These are 16 channel, 75 watt synthesized rigs, and we all thought it would be "no problem" to convert them for use on 6 meters.

Well, they *do* work on 6, but not on all the channels used by hams. These radios want to have channels on even multiples of 20KHz, i.e. 52.00, 52.02, 52.04, etc. but the 6 meter repeater frequencies are often in *odd* multiples of 20 KHz: 53.59 for example.

So the problem is, how to get the radios to work on either: (A) odd 20KHz channel spacing, or better yet, (B) 10 KHz channel spacing.

PLL Synthesizer Block Diagram and Theory of Operation*
(* at least as I understand it...)

The VCO Frequency is the desired frequency plus 10.7 MHz. It is divided by 3, divided by 2, and then divided by factor "N". The result of all these divisions should be 3.333 KHz, the same as the reference oscillator. If it is not 3.333 KHz, the Phase Comparator makes an adjustment to the VCO control voltage to correct it.



I have come up with the idea of removing the divide by 2 stage, and changing the divide by N stage to allow N to be increased by a factor of 2. This

would require changing the divide-by-N chip to a part that would allow a larger divisor... The part that is in the radio now is a 14-bit BCD divide by N counter. I could use a 12-bit binary divide by n part, which would give me sufficient range, but I cannot determine if such a part even exists...

Another idea that we have tossed around is to change the transmit offset oscillator, and the 2nd IF oscillator to be 10 KHz below their current values, which would meet (A) above, but not (B).

Does anybody have any ideas?

Thanks. Jeff.

--

/--\
Jeff Otterson	The opinions expressed here are
j_otterson@star.enet.dec.com	mine. Noone else should be held
Digital Equipment Corporation	responsible for my actions.
110 Spit Brook Rd. Nashua, NH	CENSORSHIP IS THE TOOL OF TYRANTS
\--/

112. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 19:31:55 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <21kh3b$ija@news.acns.nwu.edu>
Source record: 120029

In article <1993Jul9.162716.17540@nntpd.lkg.dec.com> j_otterson@otters.enet.dec.com writes:
>
>Here is a technical question for the PLL/Frequency Synthesizer wizards who
>I just know are out there... Admittedly, this is not a completely "homebrew"
>question, but I expect that the mods that will need to be done will get it
>pretty close.
>

A few lines deleted for brevity

>Does anybody have any ideas?

How about switching n rapidly between 2679 and 2680 to get 53.59Mhz?
If the period of switching is much less than the time constant of
the loop and the freq higher than 15Kc, then this might work and
not distort the audio much.

On off on off - it is like cw isn't it? :) :)

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

113. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 20:27:20 UTC
From: dthomas@bbx.basis.com
Message-ID: <1993Jul9.202720.25080@bbx.basis.com>
Source record: 120034

j_otterson@otters.enet.dec.com (Jeff Otterson/N1KDO) writes:

>So the problem is, how to get the radios to work on either: (A) odd 20KHz
>channel spacing, or better yet, (B) 10 KHz channel spacing.

> [...]
>I have come up with the idea of removing the divide by 2 stage, and changing
>the divide by N stage to allow N to be increased by a factor of 2. This
>would require changing the divide-by-N chip to a part that would allow a

>larger divisor... The part that is in the radio now is a 14-bit BCD divide
>by N counter. I could use a 12-bit binary divide by n part, which would give
>me sufficient range, but I cannot determine if such a part even exists...

You have the right idea! And there are lots of parts that will do what you
want. For starters, consider the Motorola MC145151-2, which I've just
bought to build my own frequency synthesizer. It has 14 bits of binary
divide-by-N (all separate pins with builtin pullups), a builtin reference
oscillator and selectable divider for same (which you probably won't need),
a phase comparator (again, you already have this), and it can handle up to
20 MHz coming in to the divide-by-N portion.

Before you jump up and down and choose this chip, there's plenty of others
that might be even better. Some use a smaller package (fewer pins) and
accept all programming serially, some have more channels, some can handle
even higher frequencies. But just FYI, the chip I've been talking about
is available from RF PARTS CO (1-800-RF-PARTS) for under $10.

As long as you're changing the rig around, I'd consider just reimplementing
the entire tuning system. Get that MC145151-2 and a xtal for the reference
frequency of your choice. If you choose the reference frequency carefully,
you can take advantage of ANOTHER cool feature of this chip. It has a
xmit/receive pin that automatically offsets N by "the right amount".
You could keep the divide-by-3 stage, but the chip can handle it from there.

David

114. Hearing Impaired/Code

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 20:55:14 UTC
From: mds5597@ritvax.isc.rit.edu
Message-ID: <1993Jul9.205514.15844@ultb.isc.rit.edu>
Source record: 120030

Hello all. I have had my ticket since last summer (N8VFZ) and now I
am starting to learn code. The only problem is that I am partially deaf and it
is very difficult to hear the difference of some of the letters. Is there a way
to light up a led instead of hearing the sound? I know a little about
electronics, but not a whole lot.

Treky

```
NNN NNN 8888888888 VV VV FFFFFFFFFFF ZZZZZZZZZZZZ
NNNNN NNN 888 888 VV VV FFFFFFFFFFF ZZ
NNN NN NNN 88 88 VV VV FF ZZ
NNN NN NNN 888888 VV VV FFFFFFF ZZ
NNN NN NNN 88 88 VV VV FFFFFF ZZ
NNN NNNNN 888 888 VVVV FF ZZ
NNN NNNN 8888888888 VVVV FF ZZZZZZZZZZZZ
```

P.S.

Live long and prosper.

115. Re: advanced packet radio in Japan

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 22:15:06 UTC
From: gold@cache.enet.dec.com
Message-ID: <C9x1qK.Eu7@ryn.mro4.dec.com>
Source record: 120033
Cross-posted to: rec.radio.amateur.packet,rec.radio.amateur.homebrew

In article <4614.6379@jf7wex.sdj.miyagi.prug.or.jp>, jf7wex@jf7wex.sdj.miyagi.prug.or.jp (Ryuji Suzuki) writes...
>Please allow me to write about our plans to experiment high speed digital
>communication over radio in Japan.
>
>TNC
> We have a type of TNC named "TNC-Z", developed by Masaaki YONEZAWA
> (JE1WAZ), using HD64180S(HITACHI), dedicated to kiss-mode.
> It can handle up to 2Mbps differntial Manchester symbol (and NRZ/NRZI)
> at radio port. Because it aims to be used for multi mode of radio,
> only a outer MODEM is available.
> PCB and diagram of TNC-Z have already distributed. Size of PCB is
> 4 x 3+3/8 (in inch).
>
>FSK
> We have already experimented 64Kbps at 1200MHz for several times.
> At that time, a pair of IC-1200 is used for full-duplex.
> (It is hard to work for the RIG as both TX and RX concurrently.)
> The modulation was done directly at the VCO of the TX-RIG,
> (Because of PLL and not scrambled, we concluded to use that symbol.)
> and a small external circuit, using MC-3356P(MOTOROLA), which converts
> IF of IC-1200 (136MHz) below into 10.7MHz, filter it, and shape
> detected signal, for demodulation was prepared.
> The book "High-speed Packet TNC" which describes V.27ter, V.29,
> 64Kbps FSK, and already distributed PCB at that time for them
> has published with genny.or.jp, but sorry for only Japanaese edition
> is available.
>
> RF part was further improved to be independent component
> separately from up-converter. The circuit and PCB, MC-2833P
> (MOTOROLA) as TX-part, the same 3356P added local osc
> (crystal controlled) and RF amp in as RX,
> also including PTT(RTS) control and voltage regulator,
> had developed by me.
> This RF PCB will be orderd soon. Size of this PCB is
> 4+3/4 x 3 (in inch).
>
> No filter was used at that experiments because digital filter was not
> in time. Now, some prototypes have already built and evaluated.
> All digital filters had developed by Shin'ichi KANNO, JN1JDZ.
> He is selecting from among them and turning it to practical use.
> Odering its PCB is in progress.
>

>PSK (being planned out.)
> Some kinds of suitable chip, dedicated to demodulate QPSK,
> are supplyed for consumer products. A kind is for NICAM, about 750Kbps.
> (728Kbps or 768Kbps??) Another is for also PCM audio channels of satelite
> broadcasting, 2.048Mbps.
> I found chips supplyed from TOSHIBA for each use, and from MICRONAS
> (Finnish company) for NICAM.
>
> Problem still lies in modulating. I know some groups using
> looking-up EPROM and D/A, and existence of variously applicable chips,
> useful for this purpose, from RF MICRO DEVICES.
>
> I think demodulator must be composed cheap and simply, but modulator
> is up to how construct. In case of using the RF-2802 or 2402,
> containing 90 degrees hybrid phase splitter and two balanced mixers,
> it is easy to do so. And the catalog says "Low Cost".
> I am interested in using them. Anyone used? How much did it cost?
>
>Protocol and software
> We simultaniously reserch broadcasting-type protocol for scattering
> USENET compatible news, amprnet-JA, over radio.
>
>Ryuji Suzuki, JF7WEX.
>Packet Radio User's Group, PRUG

116. Re: Hearing Impaired/Code

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 22:53:03 UTC
From: perry@fc.hp.com
Message-ID: <C9x68F.Crz@fc.hp.com>
Source record: 120031

mds5597@ritvax.isc.rit.edu wrote:
: Hello all. I have had my ticket since last summer (N8VFZ) and now I
: am starting to learn code. The only problem is that I am partially deaf
: and it is very difficult to hear the difference of some of the letters.
: Is there a way to light up a led instead of hearing the sound? I know a
: little about electronics, but not a whole lot.

If you contact your VE team, they know of a circuit that does what you want.

If I were designing a device, I'd use a cheap microphone driving an active bandpass filter - even Radio Shack has the parts. But first, I suggest getting a copy of the ARRL Handbook. It's thick, it's a little expensive, but it's a great starting point.

73!

Perry Scott
AA0ET

117. Re: Cellular phones for 902 MHz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-09 22:58:37 UTC
From: john@anasazi.com
Message-ID: <john.742258717@misty>
Source record: 120032

regnad@gnu.ai.mit.edu (Paul Prescott) writes:

]It's occured to me that cellular phones should be adaptable to the 902 MHz
]band without too much effort. Does anyone have any info on this?
](I am talking about more or less wholesale conversion of available "phones"
]i.e. transceivers. Not just scavenging a few parts.)

The problem is that cellular phone transceivers assume a 45 MHz split
between transmit and receive. You might find that split deeply baked
into the whole system, and thus hard to modify. For example, the synthesizer
is probably implemented in a way that takes direct advantage of this.

On the other hand, there may be phones that are hackable.
--
John Moore NJ7E, 7525 Clearwater Pkwy, Scottsdale, AZ 85253 (602-951-9326)
john@anasazi.com ncar!noao!asuvax!anasaz!john anasaz!john@asuvax.eas.asu.edu
- - My gun is safer than Ted Kennedy's car - -
- - - "It is better to be judged by twelve, than carried by six." - - -

118. 3CX800s on 70cms

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 11:06:54 UTC
From: g4klx@g4klx.demon.co.uk
Message-ID: <742302414snz@g4klx.demon.co.uk>
Source record: 120035

Hello All

I wonder if anyone can point me at an article or whatever for a design for an amplifier using a 3CX800 on 70cms. Although the maximum frequency at full ratings is only 350 MHz, it does operate at 432 MHz since there are commercial amplifiers available in that configuration. I would be interested to know values of efficiency are achieved. I have heard of one UK amateur who has used the old 8874 amplifier design by K1FO and changed it to a 3CX800 with a few undocumented changes.

All help would be much appreciated.

Jonathan

--

+-------------------------------------+--+
Internet: g4klx@g4klx.demon.co.uk	The three branches of Government:
Amprnet: g4klx@g4klx.ampr.org	Money, Television and Bullshit.
BBS: G4KLX @ GB7HMZ.GBR.EU	P.J.O'Rourke
+-------------------------------------+--+

119. Re: 455khz IF filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 13:30:08 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul10.133008.13306@ke4zv.uucp>
Source record: 120036

In article <1993Jul05.122307.29517@donau.et.tudelft.nl> wout@dutentb.et.tudelft.nl (Wout Serdijn) writes:
>Bob Segrest writes
>
>>I am interested in expanding the receive bandwidth of a commercial radio. The
>>455khz IP filter currently has a bandwidth of 12.25 khz and I would like to
>>locate or build a filter with a significantly wider bandwidth. Has anyone out
>>there had any experience with this kind of project?
>
>Wel Bob,
>
>You have two possibilities:
>
>either you can simply replace the IF filter by a short circuit (for AC, not for DC, thus use a capacitor. 1 nF will do nicely). In most cases
>the IF filter is preceded by some active stages that use a resonating
>transformer in between. They will perform your filtering action.

You can do this, but if you'd like a little better characterized
filter, check the Digi-Key catalog for Murata ceramic filters.
These are available with bandwidths up to 200 kHz. Or, the same
catalog lists Toko LC filters that could be inserted instead,
though the terminal impedances would be different.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

120. Re: Full wave center tap vs. bridge rectifier?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 13:44:59 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul10.134459.13528@ke4zv.uucp>
Source record: 120037

In article <C9pqxF.4G3@ecf.toronto.edu> wisznie@ecf.toronto.edu (WISZNIEWSKI SEBASTIAN) writes:
>I have a question to all of you designers/builders out there. I am in the
>process of building a high current power supply for my TS440S and I need
> to know which of the following will provide me with a greater current
> output. The transformer I've got has a 55 VAC secondary and a center
> tap, so in effect I've got 27.5 VAC sitting between the center tap
> and each of the two outer terminals. Here are the two choices:
>
> 1. Bridge rectifier? I'd stick a bridge rectifier between the center
> tap and one of the outer terminals which, in effect, would be
> rectifying 27.5 VAC provided by one half of the transformer?
>
> or
>
> 2. Full wave center tap rectifier? I'd ground the center tap and pass
> each of the two outer terminals through a diode (anode facing the
> transformer) and tie the diodes together at their cathodes?
>
> I would appreciate any info anybody can provide. I also welcome any other
> hints and ideas that'll help me get the most out of my transformer.

Neither of these options is very useful if you are intending to use
a series pass regulator. The voltage is still too high. Somewhat better
would be to split the windings at the center tap and use them in parallel,
mind the phasing, but that still leaves you with almost 35 volts after
a capacitive filter. That's too much, an unloaded 18 volts is ideal.

If you are intent on an analog regulated supply, then rewinding the
secondary is your best option. However, there is another alternative
that can work well. You can build a switching pre-regulator on the
primary side of the transformer to get the voltage down to around
18 volts after the capacitive filter and then do final regulation
with a pass transistor. All you need is a couple of SCRs, a pair of
trigger diodes, and a comparator. It's wise to put a fairly heavy
bleeder across the capacitor, otherwise the supply will THURM! loudly
at a low audio rate when unloaded. I've built several such supplies
since it seems that finding proper transformers for heavy 13.8 volt
supplies is difficult, but finding heavy transformers for higher
voltages is easy. (A crude rule of thumb is to multiply the weight
in pounds of the transformer by 15 to get the continous duty power
in watts it can supply.)

Gary
--

Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

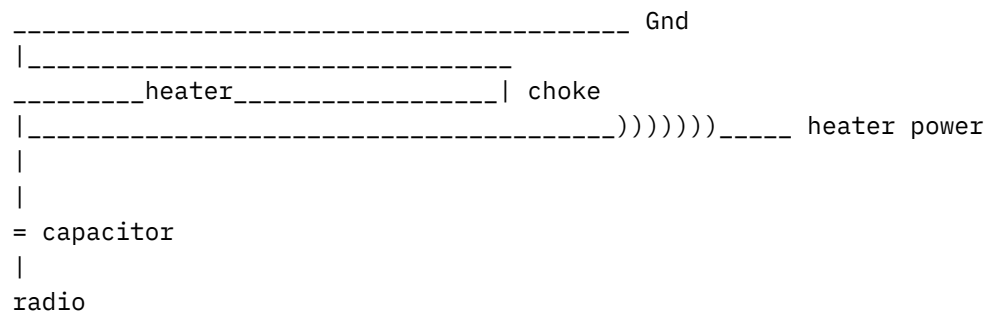
121. Re: Heated rear window antenna

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 13:57:23 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul10.135723.13619@ke4zv.uucp>
Source record: 120039

In article <C9qvB2.tI@cs.bham.ac.uk> N.H.Thomas@cs.bham.ac.uk (Neville H Thomas) writes:
>In my car,
>for connecting a VHF reciever to the heated rear window circuit,
>I think I need a DC decoupling capacitor.
>
>My problem is that I dont know what sort of capacitor to use
>e.g. tantanium, polyester etc.
> voltage rating (perhaps large enough to allow for inducive surge)
> amount of capacitance (not a clue).
>
>Any suggestions?

Yes, for VHF you don't need much capacitance. A .001 uf disc ceramic would be more than enough. It would be better, however, if you tried to do some form of matching since the impedance of the window heater antenna is likely to be far from the value expected by the receiver. Still, most receivers have more sensitivity than needed, and some antenna is better than no antenna, so try the disc ceramic first. Most are rated at 600 volts, and that's more than sufficient to handle the 12 volts in the heater wires.

If the heater is proportional, some are, then you may suffer a large amount of hash interference in your receiver. For sure you'll get all the stray noises in your vehicle's electrical system. To suppress that, and to improve the signal levels into the receiver, use a RF choke between the tap off point and the heater 12 volt wiring. Make sure it can handle the heater current. See below.



Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

122. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 14:02:06 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul10.140206.13704@ke4zv.uucp>
Source record: 120038

In article <C9rAB5.5B8@srgenprp.sr.hp.com> glenne@sr.hp.com (Glenn Elmore) writes:
>
>: On another tack, when you modulate the supply of a gunn diode, do you get
>: simultaneous am and fm modulation? The reason I ask is, would a
>
>Yes. See plots in my 1988 Ham Radio Magazine design series of a typical
>oscillator's power/freq/bias performance. I measured a fair number and
>presented an average.
>
>: gunnplexer type situation work with a regular tv receiver as the IF? If
>: there were enough AM signal, then the receiver might pick it up. I'm sure
>
> I don't think you'll get enough AM for a straight AM approach to work
>very well. You would probably do better to up/down-convert a vhf or uhf
>TV signal. Again see the Ham Radio Mag series and the references to
>wideband operation of the narrowband equipment.
>
>: that downconverting with an LNB would work well, but I'm looking for
>: simple things to mess with first. I'm only trying to shoot video over
>: about a 1 mile LOS path. Also, if you picked a low enough channel both
>: ends of the link should be in the amateur band with the gunnplexer type
>: operation (although I only need a one way link).
>
> VHF NTSC video and the mixer I show should work. Either that or you
>could build the entire phaselocked system, along with waveguide filter,
>and substitute the video for the 280-290 MHz multimode IF. That's probably
>overkill for what you want though. You should be able to get >10 miles
>with 2' dishes at each end. The 2 Mbps data link I build would do about
>40 miles over more than a 1 MHz bandwidth and > 20 dB C/N. You should
>do very well over 1-2 miles. The path will need to be truly LOS though.
>No "almost" or "2 meters works well".

It's lots simpler to simply use wideband FM video modulation. The
modulator is trivial, and the demodulator is fairly simple. You
don't need phaselocking, or even AFC for most links with good signal
margins. It's the way professional video is done for microwave hops.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

123. Re: Hearing Impaired/Code

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 15:19:40 UTC
From: gws@n8emr.cmhnet.org
Message-ID: <1993Jul10.151940.8973@n8emr.cmhnet.org>
Source record: 120041

In article <1993Jul9.205514.15844@ultb.isc.rit.edu> mds5597@ritvax.isc.rit.edu writes:
> Hello all. I have had my ticket since last summer (N8VFZ) and now I
>am starting to learn code. The only problem is that I am partially deaf and it
>is very difficult to hear the difference of some of the letters. Is there a way
>to light up a led instead of hearing the sound? I know a little about
>electronics, but not a whole lot.

I have a similar problem. I am totally deaf in one ear and have
a 40% loss in the other. I can use hearing aids for most voice
communication, but due to the changing CW note my hearing aid
AGC wasnt able to compensate. What you can do is use a headphone
but put the headphone behind your ear and use the bone connectivity
If you can get a bone conductive headphone that would help even more.
--
Gary W. Sanders gws@n8emr.cmhnet.org, 72277,1325
N8EMR @ N8JYV (ip addr) 44.70.0.1 [Ohio AMPR address coordinator]
HAM BBS 614-895-2553 (1200/2400/V.32/PEP) Voice: 614-895-2552 (eves/weekends)

124. Ramsey FTR-146 and FX-440 squelch mod

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-10 19:45:09 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseC9ys7A.KBA@netcom.com>
Source record: 120040

copied from packet:
Subject: Fix for popping squelch!

From: N2AVN@WA2UMX.#ENY.NY.USA.NA
To : RAMSEY@ALLUSA

The Ramsey FTR-146 and the FX-440 use the same audio and squelch set up, which pops and clicks very loudly as it goes in and out of squelch. The fix I've come up with softens the squelch control voltage transitions and mutes to a great degree the objectionable popping.
1) break the land pattern from Q6 to pin #1 of U2 (FX-440) and bridge with a 1K ohm resistor.
2) parallel c-48 on wire side with a 2.2 uf cap.
Try it you might like it.
73, Norm, N2AVN PS Also hv fix for low Pwr out frm 440.
==========
Note: I haven't tried or verified this, proceed at your own risk. WA2ISE
"A thousand a week doesn't go far anymore" - George Jetson

125. DOWN 18

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 00:00:29 UTC
From: z_schottacw@ccsvax.sfasu.edu
Message-ID: <1993Jul10.180029.5633@ccsvax.sfasu.edu>
Source record: 120043

Help! I'm currently trying to build a really small QRP 40m transmitter
that I found in the Jan 1970 issue of QST. My question is: how do I
find the values of a capacitor and inductor that will produce a given
resonance? Specifically, what values do I need to resonate at 7.125?

Thanks!
Chuck Schotta
Z_SCHOTTACW@CCSVAX.SFASU.EDU

126. Re: Need Help, building a DTMF decoder

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 00:04:26 UTC
From: jcraig@kean.ucs.mun.ca
Message-ID: <1993Jul10.203426.1@kean.ucs.mun.ca>
Source record: 120042

In article <211quqINNr8j@sumax.seattleu.edu>, hanner@sumax.seattleu.edu (Curtis Hanner) writes:
>
> I need help building a DTMF decoder. I can't seem to find a schematic
> anywhere, except those that reference an unavailable Radio Shack custom chip.
>
> Thanks,
>
> Curtis Hanner
> N7mWC

Motorola's MC145536 ($2-3) and a 3.759 Mc XTAL will do the job. A cmos 4514 will give you a 1 of 16 output. A recent issue of QST featured that DTMF decoder chip.

Joe, VO1NA

127. Re: Hearing Impaired/Code

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 04:12:21 UTC
From: haynes@cats.ucsc.edu
Message-ID: <21o3v5INNo3o@darkstar.UCSC.EDU>
Source record: 120044

The subject line prompted me to throw in a little bit of history that might be interesting to some.

The late Bob Weitbrecht W6NRM was profoundly deaf, but he was able to copy code. I don't know if it was a matter of feeling the vibrations from earphones, or if he had just enough hearing with just enough bandwidth to make it possible to copy code. When RTTY came along in the 1950s he was one of the early enthusiasts and great contributors to the technology.

Later he became friends with Jim Marsters, a Pasadena orthodontist, also deaf. They worked on getting Jim a ham license, but he just wasn't able to copy code at all. So Bob began experimenting with transmitting Teletype signals over the phone, and that was the beginning of today's TDD, the system deaf people use to communicate by phone.

TDD uses 60 wpm Baudot because in those days the only terminals you could get cheaply were used Teletype machines. It uses a funny modem because in those days the telephone company modems were complicated and costly.
--
haynes@cats.ucsc.edu
haynes@cats.bitnet

"Ya can talk all ya wanna, but it's dif'rent than it was!"
"No it aint! But ya gotta know the territory!"
Meredith Willson: "The Music Man"

128. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 07:44:40 UTC
From: glenne@sr.hp.com
Message-ID: <C9zpIG.I4J@srgenprp.sr.hp.com>
Source record: 120045

Gary Coffman (gary@ke4zv.uucp) wrote:

: It's lots simpler to simply use wideband FM video modulation. The
: modulator is trivial, and the demodulator is fairly simple. You
: don't need phaselocking, or even AFC for most links with good signal
: margins. It's the way professional video is done for microwave hops.

It may be simpler to use wideband FM but I don't think the resulting
quality will necessarily be acceptable if you are trying to do it with
an expensive Gunn diode source.
Getting low distortion/good linearity and simultaneous low AM out to
4+ MHz is probably not easy at all. If you use something like the
MaComm sources which have electronic tuning you'll have much better
results than bias push-tuning the cheap door opener style sources.
However you'll also be out of the low price/simple catagory which is
what I believe the original poster was seeking.

There's nothing wrong with wideband FM, the geostationary satellites
have great success with it, but it's not all that simple and cheap.

Glenn n6gn

129. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 13:04:39 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul11.130439.18673@ke4zv.uucp>
Source record: 120046

In article <C9zpIG.I4J@srgenprp.sr.hp.com> glenne@sr.hp.com (Glenn Elmore) writes:
>Gary Coffman (gary@ke4zv.uucp) wrote:
>
>: It's lots simpler to simply use wideband FM video modulation. The
>: modulator is trivial, and the demodulator is fairly simple. You
>: don't need phaselocking, or even AFC for most links with good signal
>: margins. It's the way professional video is done for microwave hops.
>
> It may be simpler to use wideband FM but I don't think the resulting
>quality will necessarily be acceptable if you are trying to do it with
>an expensive Gunn diode source.
> Getting low distortion/good linearity and simultaneous low AM out to
>4+ MHz is probably not easy at all. If you use something like the
>MaComm sources which have electronic tuning you'll have much better
>results than bias push-tuning the cheap door opener style sources.
>However you'll also be out of the low price/simple catagory which is
>what I believe the original poster was seeking.
>
> There's nothing wrong with wideband FM, the geostationary satellites
> have great success with it, but it's not all that simple and cheap.

Tell that to the folks running FM video around here. It can be that simple and cheap. Let's look at your objections. First let's look at incidental AM. Generally the most you'll see is about 20% modulation depth with a gunnplexer. With good signal margins that's insignificant, about 0.97 db, the limiter in the receiver will surpress it.

Second let's consider distortion. It's very difficult to get less than about 5% distortion on AM video. Generally it requires a circuit that RCA used to call a "pre-distorter" in order to achieve low levels of transmitted amplitude distortion. With FM modulation, less than 2% distortion is routine without any special circuits, and that's plenty good enough, corresponding to a 1 degree hue shift. That's below the eye's threshold of detection for moving video.

Remember that every videotape machine records video as an FM signal. VCRs have to contend with rather radical mechanical velocity errors that skew the recovered signal frequency and amplitude, yet they do a competent job of recovering the video. They use a PLL detector that's insensitive to AM and has a time constant that smoothes out the gross frequency errors. It's a single chip package.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary

Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

130. IROESON or IROESK experience?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-11 23:04:48 UTC
From: swamik@orca.NoSubdomain.NoDomain
Message-ID: <CA0w40.1pB@egr.uri.edu>
Source record: 120047

Has anyone built the IROESON or IROESK optoelectronic keyers?
How easy is it, how much does it cost, do they work?

tnx es 73s

131. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 14:35:37 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <21rsrp$rl3@news.acns.nwu.edu>
Source record: 120048

In article <1993Jul9.202720.25080@bbx.basis.com> dthomas@bbx.basis.com (Dave Thomas) writes:

A few lined deleted for brevity.

>
>As long as you're changing the rig around, I'd consider just reimplementing
>the entire tuning system. Get that MC145151-2 and a xtal for the reference
>frequency of your choice. If you choose the reference frequency carefully,
>you can take advantage of ANOTHER cool feature of this chip. It has a
>xmit/receive pin that automatically offsets N by "the right amount".
>You could keep the divide-by-3 stage, but the chip can handle it from there.

It is not enough to pick the reference frequency carefully for this feature to work. Unless you want to redesign you IF strip with non-standard filters, you have to pick the appropriate step size. Motorola designed this chip for a particular channelized service and a specific step size. (12.5kcs if I remember right). It works by adding a *fixed* number, 856 I think, to the programmable divider. This number is *not* field programmable.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

132. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 15:12:12 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <21rv0clNNh8o@newsstand.cit.cornell.edu>
Source record: 120050

In article <1993Jul10.140206.13704@ke4zv.uucp> Gary Coffman,
gary@ke4zv.uucp writes:
>
>It's lots simpler to simply use wideband FM video modulation. The
>modulator is trivial, and the demodulator is fairly simple. You
>don't need phaselocking, or even AFC for most links with good signal
>margins. It's the way professional video is done for microwave hops.
>
>Gary
>--
>Gary Coffman KE4ZV | You make it, |
gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | we break it. |
uunet!rsiatl!ke4zv!gary
>534 Shannon Way | Guaranteed! |
emory!kd4nc!ke4zv!gary
>Lawrenceville, GA 30244 | |

Gary, can you give me some details on this? I'm trying to do a low budget link over about a one mile LOS path. I've got a pair of gunn diodes that have mixer diodes in them. I think I know how to do the modulator more or less (although detail would help here too) but I'm not too sure about the demodulator end of things.

Is there some sort of project that was done down in your area that I could get data on?

Thanks

Kevin - WB2EMS (fkf1@cornell.edu)

133. Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 15:44:07 UTC
From: jbs@ee.ee.duke.edu
Message-ID: <17566@news.duke.edu>
Source record: 120049

I decided to build the CW transceiver whose first module's construction is outlined in the July CQ magazine (the first module consists of the audio output stage and the sidetone oscillator).

Right off the bat I found that the parts list does not match the parts needed to complete the circuit as diagrammed. Also, the author holds your hand through actual placement of the components for the audio output circuit, but neglects to mention a 470microfarad cap that appears in the circuit diagram. He sort of cuts you loose on the oscillator circuit, basically saying "connect the components following the schematic."

I got the thing built, and it works fine, but I was surprised at the errors in the parts list and the omission in the text. Also the photo of the completed module was very poor and almost useless for trying to see how the author had actually arranged the components on the board.

This is my first-ever homebrew project (not counting antennas), so I'm not sure if the difficulty I had in getting the thing put together was a result of my inexperience, or of unclear instructions. Is this sort of lack of attention to detail par for the course in these magazine articles?
I'm not sure what I should expect in the future.

Comments appreciated.

-joe KD4LLV
--
You spend the night
Like you were spending a dime
- Lyle Lovett

134. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 16:54:38 UTC
From: glenne@sr.hp.com
Message-ID: <CA29n3.FH1@srgenprp.sr.hp.com>
Source record: 120051

Gary Coffman (gary@ke4zv.uucp) wrote:

: simple and cheap. Let's look at your objections. First let's look
: at incidental AM. Generally the most you'll see is about 20% modulation
: depth with a gunnplexer. With good signal margins that's insignificant,
: about 0.97 db, the limiter in the receiver will surpress it.

: Second let's consider distortion. It's very difficult to get less than
: about 5% distortion on AM video. Generally it requires a circuit that RCA
: used to call a "pre-distorter" in order to achieve low levels of transmitted
: amplitude distortion. With FM modulation, less than 2% distortion is routine
: without any special circuits, and that's plenty good enough, corresponding
: to a 1 degree hue shift. That's below the eye's threshold of detection for
: moving video.

Well, maybe we have a difference of meaning. When you refer to
"wideband" FM, I thought you meant mod index significantly greater than
unity which is a common definition. Maybe you just meant "it takes up
considerable bandwidth". For an ATV signal with 4 MHz components, that
would lead to deviation in the several 10's of MHz, probably greater
than the 11 MHz or so that TVRO systems have to accomodate.

From the curves I published in June 1988 Ham Radio Magazine for the
Ma/Comm Gunnplexer (Page 31) and Solfan (TM) sources (page 34) it
appears that you'll get several dB of AM if you use Solfans.
Additionally, both tuning curve change slope considerably over that
much swing and I think there will be considerable distortion.
Now, it may very well be that this much distortion is acceptable for
amateur use, I don't know. However, I'm pretty sure it wouldn't do if
you are after satellite TV sort of performance.

I do agree that it is pretty easy to try.

In building the 10 GHz data link, in which I frequency modulated the
Gunn sources via the bias, the kinds of distortion introduced for wide
deviations were unacceptable for a simple system. Even so I did get
nearly Ethernet speed out of them. I remember the NEC Gunn sources
going bad at about 8 Mbps, a 4 MHz tone. This was at pretty low
modulation index, as I remember. Probably less than unity. You might
very well get TV through it if you kept the deviation low. You'll
probably not have as much system C/N budget as you might with a fancy
system, but over a short path and utilizing a little antenna gain things
may go just fine.
As I mentioned previously, the author of the Gunn Oscillator Cookbook
had good results with MaComm's Gunnplexers. These are a lot pricier than
Solfans though.

I wasn't trying to discourage anyone from trying things, just noting that there *is* considerable distortion in some of the simpler methods and to be prepared for it.

Glenn n6gn

135. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 17:44:47 UTC
From: wa2sff@cbnewsh.cb.att.com
Message-ID: <CA2Byq.lws@cbnewsh.cb.att.com>
Source record: 120052

In article <1993Jul9.162716.17540@nntpd.lkg.dec.com>, j_otterson@otters.enet.dec.com (Jeff Otterson/N1KDO) writes:
>
> Here is a technical question for the PLL/Frequency Synthesizer wizards who
> I just know are out there... Admittedly, this is not a completely "homebrew"
> question, but I expect that the mods that will need to be done will get it
> pretty close.
>
> At the Flea last fall, a few folks I know (including myself) bought some
> Standard Radio C966L VHF Lo-band Mobile Commercial Radios, with the intent
> of using them on 6. These are 16 channel, 75 watt synthesized rigs, and we
> all thought it would be "no problem" to convert them for use on 6 meters.
>
> Well, they *do* work on 6, but not on all the channels used by hams.
> These radios want to have channels on even multiples of 20KHz, i.e. 52.00,
> 52.02, 52.04, etc. but the 6 meter repeater frequencies are often in *odd*
> multiples of 20 KHz: 53.59 for example.
>
> So the problem is, how to get the radios to work on either: (A) odd 20KHz
> channel spacing, or better yet, (B) 10 KHz channel spacing.
>
> PLL Synthesizer Block Diagram and Theory of Operation*
> (* at least as I understand it...)
>
> The VCO Frequency is the desired frequency plus 10.7 MHz. It is divided
> by 3, divided by 2, and then divided by factor "N". The result of all these
> divisions should be 3.333 KHz, the same as the reference oscillator. If it
> is not 3.333 KHz, the Phase Comparator makes an adjustment to the VCO control
> voltage to correct it.
> I have come up with the idea of removing the divide by 2 stage, and changing
> the divide by N stage to allow N to be increased by a factor of 2. This
> would require changing the divide-by-N chip to a part that would allow a
> larger divisor... The part that is in the radio now is a 14-bit BCD divide
> by N counter. I could use a 12-bit binary divide by n part, which would give
> me sufficient range, but I cannot determine if such a part even exists...

It is possible to modify the radio. You need to change the divide by
N circuits for the VCO and the reference so that the loop runs at 1.6667 KHz.

I did this many years ago to a motorola pulsar car phone to put it on 2 meters.

Problems that you will run into are:

The loop gain changes and the loop may not be stable. Might have to redesign
the loop filers.

You many have to piggy back one IC onto another.

You will need a method to convert frequency into the codes for the syntheizer. If the radio is uP controller you will have to re-write the code for the uP. If if is not uP controller, you will need to use an EPROM as a code converter.

It took me six months of concerted effort to redesign the radio.

It worked beautifully when done but was a big job.

Buy some books on frequency systhesiser/ phase lock loop design. Also buy some books on control systems so that you can redesign the loop filter.

Joe Wilkes
wa2sff

136. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 19:09:49 UTC
From: adams@chuck.dallas.sgi.com
Message-ID: <CA2FwD.MB3@odin.corp.sgi.com>
Source record: 120053

In article <17566@news.duke.edu>, jbs@ee.ee.duke.edu (Joe B. Simpson) writes:
|> I decided to build the CW transceiver whose first module's construction is
|> outlined in the July CQ magazine (the first module consists of the audio output
|> stage and the sidetone oscillator).
|>
|> Right off the bat I found that the parts list does not match the parts needed
|> to complete the circuit as diagrammed. Also, the author holds your hand
|> through actual placement of the components for the audio output circuit, but
|> neglects to mention a 470microfarad cap that appears in the circuit diagram.
|> He sort of cuts you loose on the oscillator circuit, basically saying "connect
|> the components following the schematic."
|>
|> I got the thing built, and it works fine, but I was surprised at the errors
|> in the parts list and the omission in the text. Also the photo of the
|> completed module was very poor and almost useless for trying to see how the
|> author had actually arranged the components on the board.
|>
|> This is my first-ever homebrew project (not counting antennas), so I'm not
|> sure if the difficulty I had in getting the thing put together was a result
|> of my inexperience, or of unclear instructions. Is this sort of lack of
|> attention to detail par for the course in these magazine articles?
|> I'm not sure what I should expect in the future.
|>
|> Comments appreciated.
|>
|> -joe KD4LLV
|> --
|> You spend the night
|> Like you were spending a dime
|> - Lyle Lovett

Joe,

welcome to the real world. i've been a teacher for probably more
years than you've been alive and i always tell people - ' education
is expensive no matter how you get it '.

1. write to CQ and tell them what you experienced

2. tell them that you are concerned with the quality of their articles

3. ask them if they expect to continue this trend with the remaining
five parts.

4. send copy to author of article and SASE if you expect reply.

5. keep notes and keep posting to this group. you'll get help and
it'll keep us informed how the articles are progressing.

errors in parts list, schematics, and other errors are mostly due to
the magazine not closely monitoring editorial changes and also the
actual process of typesetting. if you had a degree in electrical
engineering, would you be sitting at a typesetting system? i didn't
think so. :-)

i saw the article, but decided i wasn't about to spend my time on
building something that didn't have the total schematic in one article.
(remember, CQ and the other magazines are in competition for your dollar
and mine and are happy to get a technical/construction article in 6 parts).
i was also interested in a photograph of the finished rig
in the first article from the top and bottom to see the final layout.

again, keep us posted. i'd suggest, since this is your first project,
to keep at it. i don't remember, was there a projected total cost for
the project? ask the author when you write to him. i would think that
FAR circuits will probably come out with a set of PC boards later if
there is a demand. this would significantly reduce the final size of
the rig.

good luck and good solder joints, 73 de k5fo dit dit

p.s. are you buying the parts, borrowing, begging, or do you have access
to a junk box?
inquiring minds wanna know.

--

"This is UNIX(tm)! I know this." - Lex in Jurassic Park in front of
SGI workstation.

Chuck Adams, K5FO - CP-60
adams@sgi.com

137. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 19:33:39 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jul12.193339.111499@locus.com>
Source record: 120055

In article <21rsrp$rl3@news.acns.nwu.edu> rdewan@casbah.acns.nwu.edu (Rajiv Dewan) writes:
>In article <1993Jul9.202720.25080@bbx.basis.com> dthomas@bbx.basis.com (Dave Thomas)
writes:
>
>A few lined deleted for brevity.
>
>>
>>As long as you're changing the rig around, I'd consider just reimplementing
>>the entire tuning system. Get that MC145151-2 and a xtal for the reference
>>frequency of your choice. If you choose the reference frequency carefully,
>>you can take advantage of ANOTHER cool feature of this chip. It has a
>>xmit/receive pin that automatically offsets N by "the right amount".
>>You could keep the divide-by-3 stage, but the chip can handle it from there.
>
>It is not enough to pick the reference frequency carefully for this feature
>to work. Unless you want to redesign you IF strip with non-standard filters,
>you have to pick the appropriate step size. Motorola designed this chip
>for a particular channelized service and a specific step size. (12.5kcs if
>I remember right). It works by adding a *fixed* number, 856 I think, to
>the programmable divider. This number is *not* field programmable.

Frankly, re-implementing the sythesizer in a commercial radio is a pretty
big project. I'm not sure this is the most time effective way to get
what you want. However, it is a neat project.

I'd be really careful about putting the radio on the air with a re-built
synth, checking the radio with a spectrum analyzer very carefully....

Good luck!

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

138. Re: Cellular phones for 902 MHz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 19:44:12 UTC
From: mark@ve6mgs.ampr.org
Message-ID: <1993Jul12.194412.341@ve6mgs.ampr.org>
Source record: 120057

john@anasazi.com (John R. Moore) writes:

>The problem is that cellular phone transceivers assume a 45 MHz split
>between transmit and receive.

True, and the duplexer *will* have to be removed as well as many of the Cell phones have duplexers that are not adjustable. One may be able to cut the strip lines to get them on the Ham Bands, but that would be akin to drilling out your oilways on your engine without blueprints ;-)

>On the other hand, there may be phones that are hackable.

Some are, we have a set that even have the G3RUH 9600 Baud modem coded into the firmware, allowing RS232 connection to the Cell Phone. I have yet to do the remainder of the mods (replacing the duplexer with a Pin Diode T/R switch) and final tuning as a group of us purchased these radios and are waiting for someone to `blink' (hoping someone decides to cut the duplexer up ... and has appropriate equipment to do a `good' tune into the Amateur bands).

I think the rule will be, the smaller, or newer the rig is, the harder it will be to modify ...

Ciao -- 73 de VE6MGS/Mark -sk-

139. Introduction to DSP

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 20:17:16 UTC
From: alanb@sr.hp.com
Message-ID: <CA2J0s.LM9@srgenprp.sr.hp.com>
Source record: 120054

I have seen several requests for a good introduction to Digital Signal Processing. Perhaps the following posting lifted from comp.dsp fills the bill. Disclaimers: I have not seen this book. Also, when the author says the book is "non-mathematical" he is probably speaking from an engineer's point of view. It may be heavier going for the average ham.

From: allredr@mksol.dseg.ti.com (rustin w allred)

YOU'VE GOTTA HAVE THIS BOOK!

"Digital Signal Processing: A Practical Approach", E. C. Ifeachor and B. W. Jervis, Addison-Wesley, 1993.

The world is full of books. Many of them are pretty good. Some of them are great. AND THERE ARE A FEW THAT ARE DOWN-RIGHT EXCITING! "Digital Signal Processing: A Practical Approach" (DSPAPA) is exciting (really).

This book will appeal to a large audience. Putting DSP before mathematics, DSPAPA gets down to business about how to put DSP to work. Used along with more theoretical texts it is a boon to the theoretical DSPers when they need to consider how to put that theory to work.

Newcomers to DSP or those practicing DSP without formal DSP backgrounds will find the book extremely useful as well. This book doesn't "assume the entire existing body of mathematics". Rather, it presents the necessary math and pointers to where to go for more as necessary. You will not get lost in the math--this book was written to help you get the DSP and put it to work.

Students of DSP will benefit by reading this book before studying the more theoretical treatments, or use it to help get a feel for what the theoretical books don't make clear. Professors will want to use this book for introductory courses to insure that their students get some practical knowledge painlessly. Once the intuition is established the student can go deeper into the theory with a better understanding of what it's really all about.

Algorithm implementers will like this book's practical approach. Chapter 12 even gives examples of implementations on DSP chips (TI chips were wisely chosen by the authors for these examples!).

Everyone will be happy to find hard copy of C routines for many DSP tasks. A disk containing all of these routines (source and

PC executable) and code for the DSP chip examples is also available
from the authors (I have not yet received mine but believe it will
be a worthwhile investment).

When you buy this book, here's what you'll get:

Chapter 1:Introduction
Chapter 2:Discrete transforms
Chapter 3:The z-transform and its applications in signal processing
Chapter 4:Correlation and convolution
Chapter 5:A framework for digital filter design
Chapter 6:Finite impulse response (FIR) filter design
Chapter 7:Design of infinite impulse response (IIR) digital filters
Chapter 8:Multirate digital signal processing
Chapter 9:Adaptive digital filters
Chapter 10:Spectrum estimation and analysis
Chapter 11:General- and special-purpose hardware for DSP
Chapter 12:Applications and case studies

This summary is provided as a public service and does not necessarily
reflect the views of TI, Addison-Wesley or the book's authors but is
the sole responsibility of Rusty Allred.

--
|---|
Rusty Allred, PhD	
Texas Instruments	I speak for nobody, including myself.
allredr@lobby.ti.com	

140. Re: commercial rig modification question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-12 21:08:05 UTC
From: dthomas@bbx.basis.com
Message-ID: <1993Jul12.210805.29624@bbx.basis.com>
Source record: 120056

rdewan@casbah.acns.nwu.edu (Rajiv Dewan) writes:

>It is not enough to pick the reference frequency carefully for this feature
>to work. Unless you want to redesign you IF strip with non-standard filters,
>you have to pick the appropriate step size. Motorola designed this chip
>for a particular channelized service and a specific step size. (12.5kcs if
>I remember right). It works by adding a *fixed* number, 856 I think, to
>the programmable divider. This number is *not* field programmable.

Right you are. If you want to use this feature, your step size pretty well
needs to be 12.5 KHz. Of course it's easy enough to implement your own
offset addition. To me, this is the cherry on top of the icing anyway.
I don't plan to use the +856 feature.

David

141. Re: trying to do 10 GHz cheaply

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-13 15:32:57 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul13.153257.27796@ke4zv.uucp>
Source record: 120060

In article <CA29n3.FH1@srgenprp.sr.hp.com> glenne@sr.hp.com (Glenn Elmore) writes:
>
> Well, maybe we have a difference of meaning. When you refer to
>"wideband" FM, I thought you meant mod index significantly greater than
>unity which is a common definition. Maybe you just meant "it takes up
>considerable bandwidth". For an ATV signal with 4 MHz components, that
>would lead to deviation in the several 10's of MHz, probably greater
>than the 11 MHz or so that TVRO systems have to accomodate.

TVRO systems are 22 MHz full transponder and 11 MHz half transponder.
The transponders are actually 30 MHz wide to allow some slop for less
than ideally modulated sources.

> From the curves I published in June 1988 Ham Radio Magazine for the
>Ma/Comm Gunnplexer (Page 31) and Solfan (TM) sources (page 34) it
>appears that you'll get several dB of AM if you use Solfans.
>Additionally, both tuning curve change slope considerably over that
>much swing and I think there will be considerable distortion.
> Now, it may very well be that this much distortion is acceptable for
>amateur use, I don't know. However, I'm pretty sure it wouldn't do if
>you are after satellite TV sort of performance.

Remember that the extremes of the TV waveform are sync tips and white
level. These are relatively insensitive to errors. The more critical
greyscale and chroma are in the middle of the waveform. This means
that linearity errors at the extremes of swing are less important.
A little sync compression or stretch doesn't hurt anything, and the
absolute value of peak white isn't critical either.

> I do agree that it is pretty easy to try.
>
> In building the 10 GHz data link, in which I frequency modulated the
>Gunn sources via the bias, the kinds of distortion introduced for wide
>deviations were unacceptable for a simple system. Even so I did get
>nearly Ethernet speed out of them. I remember the NEC Gunn sources
>going bad at about 8 Mbps, a 4 MHz tone. This was at pretty low
>modulation index, as I remember. Probably less than unity. You might
>very well get TV through it if you kept the deviation low. You'll
>probably not have as much system C/N budget as you might with a fancy
>system, but over a short path and utilizing a little antenna gain things
>may go just fine.
> As I mentioned previously, the author of the Gunn Oscillator Cookbook
>had good results with MaComm's Gunnplexers. These are a lot pricier than
>Solfans though.

Umm, it's MA gunnplexers that we're using. We got some bare ones cheap at Dayton 91, $20 each, and several SatTec factory refurb satellite receiver boards for $10 each. We use these as 70 MHz FM IF strips. We get good pictures at LOS ranges of 4 miles or so with just 2 foot dishes. That compares well with the commercial gear we use at the TV station for short haul portable links. Of course we can sometimes get 50+ miles out of our 2 GHz FM equipment, but that runs 10 watts with larger dishes on both ends, 4 footers on 50 foot masts on the trucks, and 8 footers at the receive sites on 1000 foot towers.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

142. Re: IROESON or IROESK experience?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-13 18:06:25 UTC
From: ag821@yfn.ysu.edu
Message-ID: <21utj1$eg@news.ysu.edu>
Source record: 120058

In a previous article, swamik@orca.NoSubdomain.NoDomain (Swami Kumaresan) says:

>Has anyone built the IROESON or IROESK optoelectronic keyers?
>How easy is it, how much does it cost, do they work?
>
>
>
>tnx es 73s
>
>

I built the Iroesk when it first appeared in QST.. wasn't a lot
of money as I remember.. I think the QST article had the cost. Had
another ham build the wood part.. used it a bunch.. it was a lot of fun
works just fine.. don't think it will replace any of my regular
keys, but sure was fun buildind and operating.. still use it
with some of my QRP rigs.. It was one of the first ham radio projects
that I ever built..so it was easy.

I am looking forward to building the paddle version as soon
as I have some time.

73

Jeff,AC4HF
--
Jeff M. Gold, AC4HF
Manager, Academic Computing Support
Tennessee Technological University

143. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-13 18:09:43 UTC
From: ag821@yfn.ysu.edu
Message-ID: <21utp7$ek@news.ysu.edu>
Source record: 120059

In a previous article, jbs@ee.ee.duke.edu (Joe B. Simpson) says:

>I decided to build the CW transceiver whose first module's construction is
>outlined in the July CQ magazine (the first module consists of the audio output
>stage and the sidetone oscillator).
>
>Right off the bat I found that the parts list does not match the parts needed
>to complete the circuit as diagrammed. Also, the author holds your hand
>through actual placement of the components for the audio output circuit, but
>neglects to mention a 470microfarad cap that appears in the circuit diagram.
>He sort of cuts you loose on the oscillator circuit, basically saying "connect
>the components following the schematic."
>
>I got the thing built, and it works fine, but I was surprised at the errors
>in the parts list and the omission in the text. Also the photo of the
>completed module was very poor and almost useless for trying to see how the
>author had actually arranged the components on the board.
>
>This is my first-ever homebrew project (not counting antennas), so I'm not
>sure if the difficulty I had in getting the thing put together was a result
>of my inexperience, or of unclear instructions. Is this sort of lack of
>attention to detail par for the course in these magazine articles?
>I'm not sure what I should expect in the future.
>
>Comments appreciated.
>
> -joe KD4LLV
>--
> You spend the night
> Like you were spending a dime
> - Lyle Lovett
>

It sounds like you have it under contol.. I find CQ to be a real
garbage magazine.. real cheapo.. don't think they have much of a staff
and the majority of their articles this last year seem to be on baluns.
Although they occasionally have a good article..I have built many of the
PVC verticals and they work great.

I was really sorry I renewed my subscription.

73

Jeff,AC4HF
--
Jeff M. Gold, AC4HF

Manager, Academic Computing Support
Tennessee Technological University

144. Test

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-13 19:54:35 UTC
From: bsplaine@sr.hp.com
Message-ID: <CA4Cn0.DD5@srgenprp.sr.hp.com>
Source record: 120061

```
this is a test.....
```

145. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-13 22:06:14 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CA4IqI.Dw6@cbnewsm.cb.att.com>
Source record: 120062

In article <21utp7$ek@news.ysu.edu> ag821@yfn.ysu.edu (Jeff Gold) writes:
>
>In a previous article, jbs@ee.ee.duke.edu (Joe B. Simpson) says:
>
>It sounds like you have it under contol.. I find CQ to be a real
>garbage magazine.. real cheapo.. don't think they have much of a staff
>and the majority of their articles this last year seem to be on baluns.
>Although they occasionally have a good article..I have built many of the
>PVC verticals and they work great.

Oh, I don't know, I like the magazine but I have to admit it is number 3
or 4 on my list of ham radio magazines. 73! or QST are tied for first
and World Radio is number 2. I have to admit I like Wayne's editorials
in 73! a lot even though him and I are on different ends of the political
spectrum. The worst of the worst is QEX, what a dog!

Jeff

--
Jeff Jones AB6MB | OPPOSE THE NORTH AMERICAN FREE TRADE AGREEMENT!
jeffj@seeker.mystic.com | Canada/USA Free Trade cost Canada 400,000 jobs.
Infolinc BBS 415-778-5929 | Want to guess how many we'll lose to Mexico?

146. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 02:44:54 UTC
From: zlau@arrl.org
Message-ID: <1717@arrl.org>
Source record: 120063

In rec.radio.amateur.homebrew, jeffj@cbnewsm.cb.att.com (jeffrey.n.jones) writes:

>spectrum. The worst of the worst is QEX, what a dog!

I guess my 222 MHz "no-tune" transverter went over worse than I thought. Good thing I didn't waste my time developing the 25 watt no-tune amp and PIN diode switch for part II.

I've been debating whether or not to take advantage an offer for exotic machine work--so I can get on the exotic bands between 100 and 300 GHz. The 120 GHz band is pretty narrow, but the 145 GHz band is a 7 GHz wide! A few Gb/s ought to keep the digital types busy for a while.

Interestingly, I subscribed to QST and CQ as a youngster, but didn't think ham radio was worth subscribing to. Not enough good articles per issue. As for QEX, I let my subscription lapse after getting free copies delivered to my desk :-).

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

147. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 09:21:04 UTC
From: zlau@arrl.org
Message-ID: <1727@arrl.org>
Source record: 119970

In rec.radio.amateur.homebrew, edbu@pogo.wv.tek.com (Ed Burress) writes:
>
>I,m trying to brew my own AM and SSB receiver for 10 and 15
>meters (maybe add 20, 40, and 80 later).
>
>I was thinking of using a LM1496 in a balanced modulator circuit,
>but I remember hearing a few years ago that there were better
>choices due to the large number of "support components" and split
>supply needed with the 1496. Can anyone suggest a better choice,

I've found that the Mini-Circuits SBL-1 works just fine for many applications. The local oscillator is often 50 dB down in a typical mid-HF application, which is usually adequate with the 10 or 15 dB of additional filtering with a good SSB filter. In addition, it is bilateral, which means you can also use it on receive. However, I wouldn't replace the SBL-1 with a cheaper homebrew diode mixer unless you added a balancing adjustment.

I'm not sure why a receiver needs a modulator.

>or suggested reading on the subject? I already have the ARRL
>handbook, but am finding it somewhat lacking. Also, are there
>SPICE models for the LM1496?

I'm also looking for non-linear models of parts as we have Microwave Harmonica to play with.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

148. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 14:49:35 UTC
From: edmitch@microsoft.com
Message-ID: <1993Jul14.144935.2256@microsoft.com>
Source record: 120067

Lectrokit,
401 W. Bogart Rd.,
Sandusky OH 44870

You can build this crystal controlled CW xcvr for 80m, 40m or 30m bands. The receiver is direct conversion and works quite well. Power output is about 1 watt. The transceiver was originally described in a 73 magazine article earlier this year but the kit of parts, PCB, etc, comes with extremely detailed instructions - on par with the old Heathkits. Lectrokit is a small outfit - probably one retired guy who is doing this out of his enthusiasm for QRP. In spite of that, he replied very quickly to my only question.

You can but the kit as a PCB+parts for (I think) about $29. Or you can buy a box and knobs for about $12 more, plus an active audio CW filter for another 6$. That all comes to something around $45-$50 total.

I really enjoyed putting my kit together, as did a friend, KG7A, who built the unit for 30m operation.

You will need to buy crystals - Lectrokit suggests a small outfit named CW Crystals - I ordered a bunch more crystals for about $3.50 a piece.

Good luck,

Ed Mitchell
KF7VY
edmitch@aol.com

149. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 16:28:18 UTC
From: adams@chuck.dallas.sgi.com
Message-ID: <CA5xr6.10x@odin.corp.sgi.com>
Source record: 120064

In article <1717@arrl.org>, zlau@arrl.org (Zack Lau) writes:
|> In rec.radio.amateur.homebrew, jeffj@cbnewsm.cb.att.com
|> (jeffrey.n.jones) writes:
|>
|> >spectrum. The worst of the worst is QEX, what a dog!
|>
|> I guess my 222 MHz "no-tune" transverter went over worse
|> than I thought. Good thing I didn't waste my time developing
|> the 25 watt no-tune amp and PIN diode switch for part II.
|>
|> I've been debating whether or not to take advantage an
|> offer for exotic machine work--so I can get on the
|> exotic bands between 100 and 300 GHz. The 120 GHz band
|> is pretty narrow, but the 145 GHz band is a 7 GHz wide!
|> A few Gb/s ought to keep the digital types busy for a
|> while.
|>
|> Interestingly, I subscribed to QST and CQ as a youngster,
|> but didn't think ham radio was worth subscribing to. Not
|> enough good articles per issue. As for QEX, I let my
|> subscription lapse after getting free copies delivered to
|> my desk :-).
|>
|> Zack Lau KH6CP/1
|>
|> Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
|> Operating Interests: 10 GHz CW/SSB/FM
|> US Mail: c/o ARRL Lab 80/40/20 CW
|> 225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
|> Newington CT 06111 modes: CW/SSB/FM/packet
|> amtor/baudot
|> Phone (if you really have to): 203-666-1541

Wow Zack,

100 to 300 GHz. at those frequencies you gotta start doing Mie Theory
for electromagnetic propagation through aerosals. almost to the point
of Rayleigh Scattering for molecular particles. i'll have to go and
figure the size parameter, 2*pi*radius/wavelength, for a 1 micron
particle to see if you qualify. ;-)

now you truly have to worry about atmospheric pollution, call the FAA
to see what the visibilty is for that day. rain will play heck with
those signals.

guess your still at the milliWatt level. take care and wear your
radiation badge at all times........

73,

--

"Be not too hard for life is short and nothing is given to man." - J. Baez

Chuck Adams, K5FO - CP60
adams@sgi.com

150. 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 16:34:50 UTC
From: edbu@pogo.wv.tek.com
Message-ID: <221cja$l32@pogo.wv.tek.com>
Source record: 120065

I,m trying to brew my own AM and SSB receiver for 10 and 15 meters (maybe add 20, 40, and 80 later).

I was thinking of using a LM1496 in a balanced modulator circuit, but I remember hearing a few years ago that there were better choices due to the large number of "support components" and split supply needed with the 1496. Can anyone suggest a better choice, or suggested reading on the subject? I already have the ARRL handbook, but am finding it somewhat lacking. Also, are there SPICE models for the LM1496?

Actually, I guess the best approach would be to build the 80 meter version, and use mixer circuits to get the other bands...

I used to be quite active in amateur radio, and would like to get back into it. Any help would be appreciated.

Thanks for listening.......

Ed

U.S. Mail: edbu@pogo
Ed Burress 63-356 Phone (503)-685-3200
Tektronix, Inc.
PO box 1000 Wilsonville, Oregon,
97070-1000

"A wise monkey never monkeys with another monkey's monkey."
---

151. Converting 49 mhz stuff, and 6-meters questions

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 16:35:50 UTC
From: jdc@cci632.cci.com
Message-ID: <1993Jul14.163550.1550@cci632.cci.com>
Source record: 119968
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

Have any of you attempted converting existing 49 mhz walkie-talkies, cordless phones, etc. to 6-meters? I have an urge to give 6-meters a try, but don't want to spend big $$$.

On a related note: Are there any inexpensive 6-meter transmitter/ receiver/tranceiver kits out there? What modes are most common (AM, SSB, CW, FM)? Is very-low-power operation practical?

73's...Jim
N2VNO

152. Re: Heated rear window antenna

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 18:12:13 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Jul14.181213.14924@kocrsv01.delcoelect.com>
Source record: 119974

One word of caution about putting a "choke" in the power line to a PWM'd heating element, is that the control module doing the PWMing was probably designed to drive a fairly "resistive" load, and now you've made an "inductive" one (I'm not sure how "big" your choke needs to be uH-wise). The inductive kick-back when the PWM controller output turns "off" might damage the controller if it wasn't designed to "snub" one (which it wasn't). If we're talking uH here, then it probably isn't too important . . . if we're talking 10's of mH then it is.

Also, heated window heaters draw "bunches" of Amps (how's that for a precise unit of measure) . . . so your choke would have to be fairly heavy wire (same or thicker than that of vehicle wire feeding the heater).

Perhaps you could try a ferrite bead instead. It adds no DC resistance, as would a wire-wound choke. It should attenuate well (if you pick the right one) into VHF region (I assume 2M?). It adds no noticeable inductance to mess-up the controller. Perhaps one of the Rat Shack "split core" units would work; this would allow you to wrap several turns around the core, if there is ample "slack" in the harness (which there usually isn't).
--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

153. ATV and Cable boxes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 18:22:13 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Jul14.182213.11048@news.unomaha.edu>
Source record: 120066

I've heard that you can use a cable box for an ATV rcvr. How is this done and what type of antenna would work best?

73's

--
| Michael Fortner * "I've got all this love to give and |
| N0??? (7 weeks and counting) * so far all I have is my ham radio" |
| ncc2001@cwis.unomaha.edu * -Selma Bouvier |

154. Re: Want: Homebrew 20 or 40mtr CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-14 21:29:08 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CA6Bos.Mxs@cbnewsm.cb.att.com>
Source record: 119969

In article <1993Jul14.144935.2256@microsoft.com> edmitch@microsoft.com (Ed Mitchell) writes:
>Lectrokit,
>401 W. Bogart Rd.,
>Sandusky OH 44870
>
>You can build this crystal controlled CW xcvr for 80m, 40m or 30m bands. The
>receiver is direct conversion and works quite well. Power output is about 1
>watt. The transceiver was originally described in a 73 magazine article
>
>You can but the kit as a PCB+parts for (I think) about $29. Or you can buy a
>box and knobs for about $12 more, plus an active audio CW filter for another
>6$. That all comes to something around $45-$50 total.
>You will need to buy crystals - Lectrokit suggests a small outfit named CW
>Crystals - I ordered a bunch more crystals for about $3.50 a piece.

Could you please post the address of CW Crystals? That's the best price
I have seen yet for them!

Jeff
--
Jeff Jones AB6MB | OPPOSE THE NORTH AMERICAN FREE TRADE AGREEMENT!
jeffj@seeker.mystic.com | Canada/USA Free Trade cost Canada 400,000 jobs.
Infolinc BBS 415-778-5929 | Want to guess how many we'll lose to Mexico?

155. Re: Converting 49 mhz stuff, and 6-meters questions

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 00:00:56 UTC
From: a229aa@email.sps.mot.com
Message-ID: <a229aa-140793170027@221.106.10.100>
Source record: 119973

In article <1993Jul14.163550.1550@cci632.cci.com>, jdc@cci632.cci.com
(James D. Cronin) wrote:
>
> Have any of you attempted converting existing 49 mhz walkie-talkies,
> cordless phones, etc. to 6-meters? I have an urge to give 6-meters
> a try, but don't want to spend big $$$.

> 73's...Jim
> N2VNO

6 meters cheap
ingredients:
ratshack TRC-505 $29.95
jan xtal - 1 rec, 1 xmit crystal $11 each
(tell them same specs as TRC-501)
minor coil tweeking

results:
hot receiver for the price
so-so auto squelch (ripe for experimentation)
miserably low power out (also ripe for experimentation)
lotso fun!

* Chris Terwilliger, AA7WD a229aa@email.sps.mot.com *
* Motorola "And now, the sequence of events, *
* 2100 E. Elliot Rd. EL374 in no particular order." *
* Tempe, AZ 85284 - Dan Rather *

156. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 05:45:58 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CA6yoM.uz@athena.cs.uga.edu>
Source record: 119971

I'm not associated with CQ or that particular project, but as a
frequent contributor to many magazines, I must point out that it
is not uncommon for my English to be rewritten to make the grammar
worse, and my diagrams to be redrawn to make them hard to follow,
often with errors of fact introduced into both.
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

157. Take this idea and run with it

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 05:49:59 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CA6yvB.yA@athena.cs.uga.edu>
Source record: 119972

Here's an idea I'd like to see someone develop.

What is the cheapest home-built 2-meter transmitter that can be
managed?

Many new hams already have 2-meter receivers (scanners).

And many hams are so close to a repeater that they could work 2m
with as little as 0.02 watt going out.

So... How cheaply can we homebrew a 2m _transmitter_ for a fixed
frequency?

Re-crystal a 49-MHz walkie-talkie and add a tripler?

Use the Motorola cordless phone IC?

Add FM to a simple crystal oscillator by adding inductance and
a varicap?

Or what? Inquiring minds want to know...

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

158. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 12:35:41 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Jul15063541@m2000.dseg.ti.com>
Source record: 119935

(Ed Burress) writes:
>
>I,m trying to brew my own AM and SSB receiver for 10 and 15
>meters (maybe add 20, 40, and 80 later).
>
>I was thinking of using a LM1496 in a balanced modulator circuit,
>but I remember hearing a few years ago that there were better
>choices due to the large number of "support components" and split
>supply needed with the 1496. Can anyone suggest a better choice,

I've seen a lot of articles talking about using the Signetics NE602 chip as a balanced modulator. I saw a recent article that showed that the Ramsey shortwave receiver used it as a front end mixer.

I'm considering building a frequency up converter using a NE602 (to put some of the Lower HF ham bands where my 10 Meter Rig can hear them). Has anyone got anything good or bad to say about this chip?

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

159. re: Take this idea and ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 12:51:15 UTC
From: swamik@orca.NoSubdomain.NoDomain
Message-ID: <CA7IDG.1zr@egr.uri.edu>
Source record: 119975

I have a copy of "Modern Electronic Circuits" (I think thats the name).
Ill give u the exact Auth, Title, ISBN if u want it. It has a schematic for a
100mw 2m transmitter with adjustable freq! The circuit uses 2 2N3904's and
an inductor, 3 or 4 capacitors, and a few resistors, and a mic. It runs
of 9VDC. Estimated cost: 6-7 dollars!!!!

I have an HT, but maybe Ill try building it anyway. It probably will only a take
15 minutes to build once u have the supplies!

73s
de KB1AMB/AA

BTW - If u want title/auth/isbn send me email. My addr is at the end of msg

---

Swami Kumaresan
swamik@orca.ele.uri.edu
swamik@morio.e-technik.uni-kl.de
KB1AMB@KA1AZ.RI (Ham Radio BBS)
kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)

KB1AMB/AA Advanced Class Amateur Radio Operator
I Monitor 147.165/.765 Repeater (WCARA in Rhode Island)
& 20 meter band (SSB & CW)

73s

---

160. MFJ 20m CW XCVR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 12:54:15 UTC
From: swamik@orca.ele.uri.edu
Message-ID: <CA7IIG.224@egr.uri.edu>
Source record: 119976

I am planning to buy an MFJ QRP tranceiver for either 40m,20m,or 17m.
Which band is the best for QRP? I will be using 5 watts thru an MFJ 949D Tuner
and a Van Gorden 102ft G5RV kit.

tnx

Swami Kumaresan
swamik@orca.ele.uri.edu
swamik@morio.e-technik.uni-kl.de
KB1AMB@KA1AZ.RI (Ham Radio BBS)
kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)

KB1AMB/AA Advanced Class Amateur Radio Operator
I Monitor 147.165/.765 Repeater
& 20 meter band (SSB & CW)

73s

---

161. Re: Building the 40m QRP CW Xceiver in July CQ

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 13:19:53 UTC
From: mikew@castle.ed.ac.uk
Message-ID: <38607@castle.ed.ac.uk>
Source record: 119977

Charles Adams (adams@chuck.dallas.sgi.com) wrote:
: In article <1717@arrl.org>, zlau@arrl.org (Zack Lau) writes:
: |> In rec.radio.amateur.homebrew, jeffj@cbnewsm.cb.att.com
: |> (jeffrey.n.jones) writes:
: |>
: |> >spectrum. The worst of the worst is QEX, what a dog!
: |>
: |> I guess my 222 MHz "no-tune" transverter went over worse
: |> than I thought. Good thing I didn't waste my time developing
: |> the 25 watt no-tune amp and PIN diode switch for part II.
: |>
: |> I've been debating whether or not to take advantage an
: |> offer for exotic machine work--so I can get on the
: |> exotic bands between 100 and 300 GHz. The 120 GHz band
: |> is pretty narrow, but the 145 GHz band is a 7 GHz wide!
: |> A few Gb/s ought to keep the digital types busy for a
: |> while.
: |>
: |> Interestingly, I subscribed to QST and CQ as a youngster,
: |> but didn't think ham radio was worth subscribing to. Not
: |> enough good articles per issue. As for QEX, I let my
: |> subscription lapse after getting free copies delivered to
: |> my desk :-).
: |>
: |> Zack Lau KH6CP/1
: |>
: |> Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
: |> Operating Interests: 10 GHz CW/SSB/FM
: |> US Mail: c/o ARRL Lab 80/40/20 CW
: |> 225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
: |> Newington CT 06111 modes: CW/SSB/FM/packet
: |> amtor/baudot
: |> Phone (if you really have to): 203-666-1541

: Wow Zack,

: 100 to 300 GHz. at those frequencies you gotta start doing Mie Theory
: for electromagnetic propagation through aerosals. almost to the point
: of Rayleigh Scattering for molecular particles. i'll have to go and
: figure the size parameter, 2*pi*radius/wavelength, for a 1 micron
: particle to see if you qualify. ;-)

: now you truly have to worry about atmospheric pollution, call the FAA
: to see what the visibilty is for that day. rain will play heck with
: those signals.

: guess your still at the milliWatt level. take care and wear your
: radiation badge at all times........

And lead underpants....

: 73,

: --

: "Be not too hard for life is short and nothing is given to man." - J. Baez

: Chuck Adams, K5FO - CP60
: adams@sgi.com
--

Mike Worling, M.I.S., University of Edinburgh, Old College, South Bridge,
Edinburgh, EH8 9YL. Tel. 031-650-2115.

162. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 13:32:09 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-742743120@unomaha.edu>
Source record: 119978
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
===========================

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

163. KA7QJY Components?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 14:03:37 UTC
From: jfw@ksr.com
Message-ID: <29482@ksr.com>
Source record: 119979
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

I just got a flyer in the mail from "Dan's Small Parts And Kits", in Missoula MT. It apparently is Danny Stevig, who used to run KA7QJY Components, but now under a different name and a different state as well. Does anyone know what the deal is? I sent a letter a couple of days ago, and I think I'll call the old phone number tonight to see if he really has moved, but I wondered if any of the readers here knew the story.

John, WB7EEL

164. Re: KA7QJY Components?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 14:31:13 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CA7n04.KBy@cbnewsm.cb.att.com>
Source record: 119980
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <29482@ksr.com> jfw@ksr.com (John F. Woods) writes:
>I just got a flyer in the mail from "Dan's Small Parts And Kits", in
>Missoula MT. It apparently is Danny Stevig, who used to run KA7QJY Components,
>but now under a different name and a different state as well. Does anyone
>know what the deal is? I sent a letter a couple of days ago, and I think I'll
>call the old phone number tonight to see if he really has moved, but I
>wondered if any of the readers here knew the story.

Yes, Danny has moved! Here is his new address for anyone that want's it;

DAN'S SMALL PARTS AND KITS
1935 S. 3RD W. #1
MISSOULA, MT. 59801
PHONE/FAX 1-406-543-2872

Also should mention that he is carrying some kits now, such as the following,

40 meter Cubic Incher $12.50
Two-Fer Transmiter $22.50
Neophyte Receiver $22.95
20 meter Superhet transceiver $49.95, From Jan. QRP Quarterly, anyone have
any info on this?
Little Joe Transmiter $17.50 without crystal
QRP crystals,14060, 3560,7040,7110,10.106 $5.00 each!

Shipping $3.75 per order, make check payable to Danny Stevig.

Don't work for him just a satisfied customer!

Jeff Jones
--
Jeff Jones AB6MB | OPPOSE THE NORTH AMERICAN FREE TRADE AGREEMENT!
jeffj@seeker.mystic.com | Canada/USA Free Trade cost Canada 400,000 jobs.
Infolinc BBS 415-778-5929 | Want to guess how many we'll lose to Mexico?

165. Take this idea and ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 15:15:09 UTC
From: hess@boi.hp.com
Message-ID: <CA7p1A.H2A@boi.hp.com>
Source record: 119981

Could you please post the citation(s) for the article on a 100mW 2M transceiver?
I would LOVE to build this! Thanks!

--
The statements/opinions expressed here are not necessarily those of the
Hewlett-Packard Company. HP has paid a research firm millions of dollars
to get good opinions, and has made it clear they do not wish to share mine,
even though mine are free.

Kevin C. Hess (KB7UKR) "There can be only one!"
hess@hpdmd48.boi.hp.com -Conner McLeod
Hewlett-Packard Network Printer Division

166. Mitsubishi M57729H

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 16:05:52 UTC
From: pjka@jyu.fi
Message-ID: <PJKA.93Jul15190550@tukki.jyu.fi>
Source record: 119983

Friend of mine is about to build some FM amplifiers for 70cm and he
needs info about the following hybrid: Mitsubishi M57729H.
So if you have the data sheets handy, please mail me ... any
information is helpful ... please mail me ;-D (guess if I'm going to
ask one for myself ??? :-D)

73 es GL de OH6KTR
--
\begin{stquote}
Elementary my dear Riker...sir.
-- Data, "Lonely Among Us", stardate 41249.3
\end{stquote}
--
-=- Pertti Karppinen -=- pjka@jyu.fi -=- pjka@finjyu.bitnet -=- jylk::pjka -=-
-=- /G=Pertti/S=Karppinen/O=jyu/ADMD=fumail/C=fi/ -=-
-=- HAM CallSign: OH6KTR -=-
'Bridge Players do it on the table.'

167. Active Mixers (MC1496 & NE602A)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 16:23:05 UTC
From: epacyna@auratek.COM
Message-ID: <1139@auratek.COM>
Source record: 119982

Having built dozens of receivers and transceivers using these parts, here is my 2 cents.

Get the manufactures data sheets and application notes for these parts. They will show you what performance can be expected and how to use these parts. The MC1496 is by Motorola with the LM1496 and NE602A by Signetics.

The NE602A is a 8 pin dip containing a double balanced mixer (Gilbert Cell) and oscillator/buffer. Biasing circuits and port terminations are included so only a minimal amount of external componets (L's and C's) are necessary to put the NE602A to use. The devise also has a lot of conversation gain and a reasonable noise figure. However these apparent advantages are also drawbacks (harmonic distortion, awkward Z matching, low level signal use etc.).

The 1496 does require additional parts for setting bias point, port termination and gain; but with this come advantages. The 1496 performance characteristics are much better documented in the data and app notes. The 1496 can easily be used with single rail power supplies.

73

Ed W1AAZ

168. Re: Converting 49 mhz stuff, and 6-meters questions

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 17:09:14 UTC
From: hgpeach@ms.uky.edu
Message-ID: <CA7uBG.J5M@ms.uky.edu>
Source record: 119989
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

jdc@cci632.cci.com (James D. Cronin) writes:

>Have any of you attempted converting existing 49 mhz walkie-talkies,
>cordless phones, etc. to 6-meters? I have an urge to give 6-meters

Awhile back someone posted the results of such an attempt. They
were using a set of baby monitors. In the case of the baby monitors,
all that was required was to replace the crystal. Bob Parness (I
think) later posted some instructions on how to convert baby monitors
to 6-meters.

73, Harold, N4FLZ
--
Harold G. Peach, Jr. ><> N4FLZ _% hgpeach@s.ms.uky.edu

169. Re: KA7QJY Components?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 17:32:04 UTC
From: adams@chuck.dallas.sgi.com
Message-ID: <CA7vDH.9rE@odin.corp.sgi.com>
Source record: 119985
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

```
...stuff deleted...
|> 20 meter Superhet transceiver $49.95, From Jan. QRP Quarterly, anyone have
|> any info on this?
...more stuff gone...
|> Shipping $3.75 per order, make check payable to Danny Stevig.
|>
|> Don't work for him just a satisfied customer!
|>
|> Jeff Jones
|> --
|> Jeff Jones AB6MB | OPPOSE THE NORTH AMERICAN FREE TRADE AGREEMENT!
|> jeffj@seeker.mystic.com | Canada/USA Free Trade cost Canada 400,000 jobs.
|> Infolinc BBS 415-778-5929 | Want to guess how many we'll lose to Mexico?
```

the transceiver in the january 1993 QQ looked very good, at least as shown in the photographs and in the schematics. i'd think the $49.95 price, assumming this is components and boards without case and associated hardware such as jacks, PL-259, etc. is very reasonable. the rig is qsk without relay and uses 2SC799 as final, so it'll do ok on power out, say 3 or so watts. the article used two boards. does Danny's kit?

i was looking at the article last night. the receiver and transmitter looked at lot like the new MXM rig which Bruce Williams, WA6IVC has been working on the during the last year.

i'll fax to Danny and get more details and bring the article tomorrow in QQ for details. thanks Jeff for the note on Danny. knew that he was moving etc. but hadn't heard anymore. wonder if he'll be able to get rf outta the valley there. nice quite place, in fact wouldn't mind living there myself, but i'll be the winters are hell on wheels. ;-)

from the warm south,

dit dit
--

"Be not too hard for life is short and nothing is given to man." - J. Baez

Chuck Adams, K5FO - CP60
adams@sgi.com

170. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 17:35:00 UTC
From: markz@ssc.com
Message-ID: <1993Jul15.173500.12354@ssc.com>
Source record: 119990

Ed Burress (edbu@pogo.wv.tek.com) wrote:
: I was thinking of using a LM1496 in a balanced modulator circuit,
: but I remember hearing a few years ago that there were better
: choices due to the large number of "support components" and split
: supply needed with the 1496.

Why does everyone use the National part number when
Motorola was the original source?

Mark Zenier markz@ssc.wa.com markz@ssc.com

171. Re: KA7QJY Components?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 17:52:52 UTC
From: rossi@VFL.Paramax.COM
Message-ID: <1993Jul15.175252.18376@VFL.Paramax.COM>
Source record: 119986
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <CA7n04.KBy@cbnewsm.cb.att.com> jeffj@cbnewsm.cb.att.com (jeffrey.n.jones) writes:
>In article <29482@ksr.com> jfw@ksr.com (John F. Woods) writes:
>>I just got a flyer in the mail from "Dan's Small Parts And Kits", in
>>Missoula MT. It apparently is Danny Stevig, who used to run KA7QJY Components,
>>but now under a different name and a different state as well. Does anyone
>>know what the deal is? I sent a letter a couple of days ago, and I think I'll
>>call the old phone number tonight to see if he really has moved, but I
>>wondered if any of the readers here knew the story.
>
>Yes, Danny has moved! Here is his new address for anyone that want's it;
>
>DAN'S SMALL PARTS AND KITS
>1935 S. 3RD W. #1
>MISSOULA, MT. 59801
>PHONE/FAX 1-406-543-2872

Apparently when he moves he does not have his mail forwarded (Hmmmm... ???)

Just after his last move I sent him a letter requesting his latest price list
and never got it. That is when I found out that he had moved. Apparently
mail to the old address did not get forwarded.

I have ordered from him twice over the past few years. Good service otherwise.

==========
Pete Rossi - WA3NNA rossi@VFL.Paramax.COM

Paramax Systems Corporation - a Unisys Company
Valley Forge Engineering Center - Paoli, Pennsylvania
==========

172. Re: Take this idea and run with it

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 18:40:54 UTC
From: mbutts@mbutts.mentorg.com
Message-ID: <1993Jul15.184054.4234@news.mentorg.com>
Source record: 119984

In article <CA6yvB.yA@athena.cs.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
|> Here's an idea I'd like to see someone develop.
|>
|> What is the cheapest home-built 2-meter transmitter that can be
|> managed?
|>
|> Many new hams already have 2-meter receivers (scanners).
|>
|> And many hams are so close to a repeater that they could work 2m
|> with as little as 0.02 watt going out.
|>
|> So... How cheaply can we homebrew a 2m _transmitter_ for a fixed
|> frequency?
|>

About April of last year, John Woods posted to rec.radio.amateur:

In article <11322@ksr.com> jfw@ksr.com (John F. Woods) wrote:
>RF Design this month has an article about the MC13175 and MC13176 ICs,
>which are aimed at simple data transmitters for consumer electronics,
>in particular in the 902-to-928MHz band. The ICs comprise a Colpitts
>reference crystal oscillator, a UHF oscillator, a fixed division
>prescaler (/8 for the 13175, /32 for the 13176), and a phase detector.
>It can be phase modulated for FM voice or low data rate applications,
>or AM modulated (up to 25MHz bandwidth, making video transmission
>possible). It looks like it has lots of possibilities for simple
>fixed-frequency gadgets.

An obvious application would be a very simple VHF/UHF CW, FM (PM actually)
or AM transmitter. VXO for tuning. Since it's a phase-locked loop,
not heterodyned, pushing the rock 3 kHz can get you 96 kHz of bandspread.

I haven't heard anything about these new Motorola chips since, nor have I
seen anything in ham mags. Anyone tried one yet?

73 de KC7IT

--
Mike Butts mbutts@qcktrn.com Research Engineering Mgr. 503-685-1302
Quickturn Systems, Inc., 8005 SW Boeckman Road, Wilsonville, Oregon 97070
My opinions are my own, and aren't necessarily shared by Quickturn Systems.

173. My List of Mail Order Electronics Companies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 20:12:59 UTC
From: jfw@ksr.com
Message-ID: <29517@ksr.com>
Source record: 119987
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.info

[$Revision: 2.13 $; last updated July 15, 1993]

Here is my list of companies which will sell electronic components in small quantities. Most of these places I have bought from, a couple I haven't. Being a ham radio operator, I am most interested in RF components, and in particular, air variable capacitors, which tend to be scarce (and tend to be used or surplus even if I've otherwise labelled the seller as "NEW"). I apologize in advance for disparaging remarks about what happens when parts suppliers start selling computers, but anyone who has watched Jameco over the years will know just what I mean (though their latest catalog hints at possibly returning to selling parts).

Categories are:
NEW COMPONENTS Distributors and sellers of new components, or "new and some used" in a couple of cases.
SURPLUS ELECTRONICS Usually overstocks, occasionally used equipment. Ideal for stocking the junkbox, usually have dependable stock lines of resistors, capacitors, and some semiconductors, but won't have those LCD modules forever... An invaluable resource, don't shy away from them.
SPECIALTY COMPONENTS In particular, crystals and toroidal cores.
KITS Ham radio kits, random electronic kits, whatever they have.
LITTLE GUYS Separated out because of some twisted sentimentality, I suppose. Intended to honor one or two ham spare-bedroom operations. Note that sending $1 along with catalog requests is a big help for these folks.
PUBLICATIONS Two publications which are essentially all want-ads, plus the address for SAMS PHOTOFACTS because everyone always asks about it on sci.electronics.

Note on shipping costs: I don't always update these frequently enough, and they're generally for continental US unless otherwise mentioned.

NEW COMPONENTS:

Ocean State Electronics
P.O. Box 1458
Westerly RI 02891
(800)-866-6626 (orders)
(401)-596-3080
(401)-596-3590 (FAX)
Minimum $5, S&H $4, free catalog. Wide array of RF parts, especially air variables and B&W coils.

Radiokit (store is located at:)
P.O.Box 973 169 Jeremy Hill Rd.
Pelham NH 03076 Pelham NH 03076
(603) 635-2235
No minimum ($3 service charge if under $20), many kits, lots of J. W. Miller chokes & coils, B&W coils, RF switches, Millen variable capacitors, lots of parts in general. Send $1 for the catalog (but note that they are STILL (12-May-93) out of catalogs and it will probably be months before the next one is ready).

Circuit Specialists Inc
P. O. Box 3047
Scottsdale AZ 85271-3047
(800) 528-1417
No minimum with check or money order, $15 otherwise. $3 S&H.
New electronics, good RF assortment, increasing infestation of computers.

Mouser Electronics Mouser Electronics Mouser Electronics
11433 Woodside Ave. 2401 Highway 287 North 12 Emery Ave.
Santee CA 92071 Mansfield TX 76063 Randolf NJ 07869
Mouser Electronics
370 Tomkins Court
Gilroy CA 95020
Catalog Subscriptions: (800) 992-9943 (Continental US only)
Sales & Service: (800) 34-MOUSER (800-346-6873) (US, Puerto R., Canada)
Very complete catalog of brand-new components (though no air variables). Usually quick service, $20 "minimum" ($5 charge under $20). When ordering, you may want to be sure to ask about availability and shipping locations; they have several warehouses, and frequently orders will get sent from several warehouses (which drives up the shipping costs).

Digi-Key
701 Brooks Ave. South
P.O.Box 677
Thief River Falls, MN 56701-0677
1-800-DIGI-KEY
No minimum, $5 handling under $25, free and very complete catalog, very nice indeed. Prices aren't always the best, but rarely excessive. Weak on RF specialty parts (though they now have the ever-popular NE602N), but they do have blue LEDs.

Active Electronics
11 Cummings Park 237 Hymus Blvd
Woburn MA 01801 Pointe Claire, Quebec, H9R 5C7
(800)-677-8899 (US)
(800)-363-6592 (Canada) [Not listed in current catalog, try US number]
$25 minimum, $5 S&H UPS, catalog has a "$10 Suggested retail price" but they sent mine for free. They have 8 stores in the US (Santa Clara CA; Chicago IL; Baltimore MD; Woburn MA; Detroit MI; Mt. Laurel NJ; Long Island NY; Seattle WA) and 10 stores in Canada (Quebec City; Montreal (2); Ottawa; Mississuaga; Winnipeg; Calgary; Toronto; Edmonton; Vancouver BC). Lots of stuff, oriented more toward supplying last-minute requirements of companies than

hobbyists, but perfectly happy to take your money in small doses (stores have no minimum order). The $25 minimum for certain items is no longer explicit, but they note that some items will "ship in factory minimum package quantities", which might be worse.

Maplin Electronics Ltd.,
P.O. Box 3,
Rayleigh,
Essex,
SS6 8LR
U.K.
Phone numbers: your international code +44 702 554161 for sales
+44 702 553935 Fax
+44 702 556001 Tech enquiries(2-4pmGMT)
"Over here [in the United Kingdom] the main hobbyist electronics supplier is Maplin Electronics who stock a wide variety of equipment. They have a catalogue which can be shipped for 10.65 pounds sterling by air or 5.50 pounds sterling by surface mail. They accept Mastercard, American Express and International Reply Coupons. They have at least one type of air-filled variable capacitor!" (Thanks to Kev White at Cambridge University).

Newark Electronics
Send catalog requests to:
Newark Electronics
ATTENTION CATALOG DEPARTMENT
4801 N. Ravenswood Ave.
Chicago IL 60640-4496
(312) 784-5100
They don't have a single mail address or phone; instead, one is supposed to call the closest of three pages worth of branch offices. I don't feel like typing in the entire list (it's copyrighted, anyway :-), so send email for your "local" distributor, or call their administrative offices at the number above. They have a $25 minimum order; they are a Real Distributor, but accept small orders (over the minimum, of course). Their catalog currently 1248 pages; they are very complete (except, of course, for my favorite scarce item, the air-variable capacitor). Note that the catalog prices tend not to match reality all that often, so order by phone rather than by mail; prices tend to be higher than other places, but they have a lot of things that are hard to find from other outlets. Also note that they have six Canadian offices, and one UK office, and will take international orders at 500 N. Pulaski St., Chicago IL 60624-1019, +1-312-784-5100
(FAX +1-312-638-7652, TLX 6718690 NEWARK U).

Arrow Electronics, Inc. Catalog requests to:
Catalog Division Catalog Division
1860 Smithtown Ave. 25 Hub Drive
Ronkonkoma NY 11779 Melville NY 11747-9828
(800) 93-ARROW
Minimum $25; they no longer have a catalog. They are a Real Distributor, but also didn't mind my placing a personal order (a couple of years ago).

MCM Electronics
650 Congress Park Drive
Centerville OH 45459-4072
(800) 543-4330
Minimum $20 ($25 for charge cards, and they don't take personal checks), handling $1.95 + shipping. Oriented toward repair technicians, really heavy on VCR parts and somewhat overpriced doodads, lots of useful stuff not easily found elsewhere.

Fordham Radio Supply
260 Motor Parkway
Hauppauge NY 11788-5134
(800)695-4848
Tools for technicians. One or two items are not outrageously overpriced.

Jameco
1355 Shoreway Road
Belmost CA 94002
(800) 831-4242
(800) 237-6948 (FAX)
(415) 592-8097
$30 minimum order (was $50), >$5 shipping & handling. Their most recent catalog may have reversed a long trend of abandoning parts in favor of PC compatibles, or it may not; one can always hope.

JDR Microdevices
2233 Branham Lane
San Jose CA 95124
Orders: 800-538-5000
Cust. Service: 800-538-5001
No minimum, $5+ shipping. Mostly computers now, but they haven't yet decided to abandon components; indeed, they recently dropped their minimum order requirement entirely.

Johnson Shop Products
P.O.Box 160113
Cupertino CA 95016
(408)257-8614 (408)996-3240
Catalog $1. No minimum. Shipping charge is based on UPS; very small orders that can be sensibly shipped in a first-class letter, include money for first-class postage. New and some used electronic parts.

DC Electronics
P. O. Box 3203
Scottsdale AZ 85271-3203
(800) 423-0070 (orders)
(602) 945-7736 (stock/price checks)
$15 minimum charge order, no minimum for checks, $3 min. shipping&handling.
Wide array of ICs, good assortment of electronic components.

EasyTech Inc *** out of business? ***
2917 Bayview Drive
Fremont CA 94538-9932

(800) 582-4044 (orders) (no longer in service?)
(510) 770-2345 (customer Service)
Apparently a brand new company, "dedicated to serving the Electronic Enthusiast/User." $10 minimum, UPS shipping is 5% of order (>= $3).
11 May 93: "EasyTech no longer has an 800 number, and has dropped several lines. The last time I called them (2 months ago), I got the impression they were slowly going down the tubes..." - dts@banyan.com "Both of their 800 number and the customer services numbers are disconnected, and no new numbers are given." - lau@gandalf.rutgers.edu

International Components Corporation
1803 NW Lincoln Way
Toledo OR 97391-1014
(800)325-0101 (US & Canada)
(503) 336-4400 (FAX)
Cabinets&Enclosures; Capacitors; Diodes; ICs; Potentiometers; Resistors; Sockets; Transistors; Books. No minimum order, $2 handling under $25.

Kelvin Electronics
7 Fairchild Ave.
Plainview NY 11803
(800) 645-9212
(516) 349-7620
(516) 349-7830 (FAX)
Minimum order $20; S&H 5% of order ($5 minimum, extra for large stuff, overnight, export (like to Hawaii :-), and etchant; based on UPS charges). Lots of electronic parts & tools, some robotics supplies, model rockets.

H & R Company (Herbach and Rademan)
18 Canal Street, P.O.Box 122
Bristol PA 19007-0122
(800) 848-8001 (Orders)
(215) 788-5583
(215) 788-9577 (FAX)
Minimum order $25 ($5 processing charge under $25), shipping $4.75 under $30; Most items are new overstocks, much regularly stocked stuff as well. Tools, electrical supplies, motors, mechanical components, robotic components.

SURPLUS ELECTRONICS:

All Electronics Corp.
P. O. Box 567
Van Nuys CA 91408-0567
(800) 826-5432
$10 minimum, $3.50 S&H. New and surplus electronics.

Alltronics
2300 Zanker Road
San Jose CA 95131
(408) 943-9773
(408) 943-9776 FAX
Surplus electronics. $12 minimum, shipping per UPS.

American Science and Surplus (formerly JerryCo)
P.O. Box 48838
Niles IL 60714-0838 ### New address.
(708) 475-8440
(708) 864-1589 FAX
Surplus. *The* surplus place. Lots and lots of surplus. WWII gun cameras, velcro, laser disk chassis, 6 volt VW wipers motors, LEDs, rubber brains, you name it, they've had it. Catalogs are a really good time.
$12.50 minimum order (which includes the $4 shipping charge).

BCD Electro
P. O. Box 450207
Garland TX 75045-0207
(214) 343-1770
$1 for 1-year subscription to catalogs, no minimum, $0.95 for under $30, $2.90 shipping (extra for Alaska & Hawaii). Surplus electronics, pretty random looking assortment.

Fair Radio Sales
P. O. Box 1105
1016 E Eureka St.
Lima OH 45802
(419) 227-6573
Surplus electronics. Heavy on parts for old Collins gear.

Hosfelt Electronics
2700 Sunset Blvd.
Steubenville OH 43952
(800) 524-6464
No minimum, $3.75 S&H. Surplus electronics.

HSC Electronic Supply (Halted Specialties Co.)
3500 Ryder Street
Santa Clara, CA 95051
(800) 4-HALTED Orders only
(408) 732-1573 inside California and outside US
Surplus (new) electronics; new and used test equipment. Minimum order $10 ($2 handling charge under $20), plus UPS shipping cost. Has three stores, of which 3500 Ryder Street is one.

Marlin P. Jones & Assoc.
P.O. Box 12685
Lake Park FL 33403-0685
(407) 848-8236
No minimum ($1 fee for under $10), shipping per UPS. Surplus electronics.

R&D Electronics
1224 Prospect Ave.
Cleveland OH 44115
orders: (800) 642-1123 (tues - fri 9am-4pm sat. 9am-3pm EST)
info: (216) 621-1121
$10 minimum. Surplus electronics.
"Also known to stock many components, but this is not discussed in the catalog.

Local store, a cleveland institution, is called Electronic Surplus, Inc., and has been there since '48. Third generation now runs it." -- wb8foz

Surplus Sales of Nebraska
1502 Jones Street
Omaha, Nebraska 68102
(402) 346-4750
(402) 346-2939 (FAX)
New and surplus radio electronics. Wide selection: air variables.
Catalog $3 (free with order, refundable with $25 catalog purchase).

Tucker Surplus Store
1717 Reserve St.
Garland TX 75042
(800) 527-4642 extension 135
Surplus electronic gear; oscilloscopes and signal generators from the days when dinosaurs with vacuum tubes roamed the earth (some solid state gear, but all well used). Prices seem relatively high, and you'll be shocked to learn how much it costs to ship a 75 pound oscilloscope by motor freight...
[Steve Brown, N8HFI:
In defense of Tucker, the have a broad selection, repair facilities, and they certify the used equipment to meet the original specification and warranty it for 90 days. Not every source does this:]

Davilyn Corp.
13406 Saticoy St.
North Hollywood, CA 91605-3475
1-800-235-6222 (Ex. CA)
1-818-787-3334 (CA)
1-818-787-4732 (FAX)
Surplus electronic gear.
[has much better prices [than Tucker], but sells used equipment as-is. -N8HFI]

SPECIALTY COMPONENTS:

JAN Crystals
2341 Crystal Drive
P.O. Box 06017
Fort Myers FL 33906-6017
(800) JAN-XTAL (Monday through Thursday)
They make crystals. Minimum order is $10, which might be one crystal, or might be two.

Crystek Corporation
2351/2371 Crystal Drive
P.O. Box 06135
Fort Myers FL 33906-6135
(800) 237-3061 (M-F)
They make crystals too. They were the cheapest last time I ordered, but I don't have an up-to-date price list. It took about 4 weeks, and they had said it would take 6.

ICM (International Crystal Manufacturing Co., Inc.)
701 W. Sheridan
PO Box 26330
Oklahoma City OK 73126-0330
(800) 426-9825
More crystals. They were more expensive, but they have lots of pre-made crystals for various rigs, so they would probably be faster.

Amidon Associates
2216 East Gladwick Street
Dominiguez Hills, CA 90220
(213) 763-5770
(213) 763-2250 (FAX)
Toroid cores and related things. Very fast service. Now takes MC/Visa and phone orders.

Palomar Engineers
Box 455
Escondido CA 92033
(619) 747-3343
Toroid cores and shielding beads.

K2AW's Silicon Alley
175 Friends Lane
Westbury NY 11590
516-334-7024
Free catalog, $10 minimum order. Semiconductors, in particular high-voltage diodes.

Small Parts, Inc. [New address and phone, 23 Dec 91]
13980 NW 58th Court
P.O. Box 4650
Miami Lakes, FL 33014-0650
(305) 557-8222 Order department
(305) 557-7955 Customer Service (ask for Mirta)
(305) 558-1255 Catalog (ask for Elizabeth)
(305) 557-8004 Custom-made Parts (ask for Ziggy)
(305) 557-8005 Non-standard Sizes
of catalog parts (ask for Eric)
(800) 423-9009 Toll free FAX line
$12 minimum. Mechanical parts, metal stock, Teflon(R) sheets, tools, wire-size drill bits (as in #61 size for PC board holes).

KITS:
(The terse "Note:" descriptions are from the ARRL Kit List courteously supplied by Ed Hare and Mike Gruber at the ARRL.)

624 Kits
171 Springlake Drive
Spartanburg SC 29302
QRP kits (including some designs from W1FB's books) and some parts.

A&A Engineering
2521 W. LaPalma, Unit K
Anaheim CA 92801
(714) 952-2114
Kits, some components, some books. S&H $4.50, catalog is free with SASE (2 oz postage).

Antique Electronic Supply
6221 S. Maple Ave.
Tempe, AZ 85283
(602) 820-5411
Note: Broadcast receiver kits

C.M. Howes Communications
Eydon, Daventry,
Northants NN11 6PT
England
Phone: +44 327 60178
QRP, transmitters, receivers, misc. "The Heathkit of England", though with assembly manuals not as detailed, also without the intricate mechanicals of Heathkits.
[Carried by Townsend Electronics (at least) in the US]

Communications Concepts Inc.
121 Brown Street
Dayton, Ohio 45402
(513) 220-9677
kits for Motorola Applications Notes (amplifiers and the like), small assortment of components (chip capacitors, transistors).

Down East Microwave
Box 2310, RR#1
Troy, ME 04987
(207) 948-3741
Note: Microwave preamps

FAR Circuits
18N640 Field Court
Dundee IL 60118
Printed circuit boards for articles in the usual ham magazines. SASE for list. $1.50 shipping and handling per four boards.

Hamtronics, Inc.
65 Moul Road
Hilton, NY 14468-9535
(716) 392-9430
Note: Amateur, general interest

John Langner WB2OSZ
115 Stedman St.
Chelmsford, MA 01824-1823
(508) 256 6907
Slow Scan Television for IBM PC.

Lake Electronics
7 Middleton Close
Nuthall
Nottingham NG16 1BX
England
Note: Amateur

Mercury Systems
15 Lakeside Dr.
Marlton, NJ 08053
1-609-596-3304
Note: the ARRL Kit list didn't say what they carry; I don't (yet) know either.

Penntek Electronics
14 Peace Dr.
Lewistown, PA 17044
(717) 248-2507
Note: The Neophyte Receiver, QST

Ramsey Electronics
793 Canning Parkway
Victor NY 14564
(716) 924-4560
Amateur radio and hobby kits. The ham kits are all pretty simple and pretty inexpensive, and you get about what you pay for. Their new VHF transceiver kits (144, 220, 440) look pretty interesting. Many have complained about the quality of their kits, though.

Townsend Electronics, Inc.
Box 415
133 N. 1st Street
Pierceton IN 46562
(800) 944-3661 (US only)
(219) 594-3661
(219) 594-5580 (FAX)
C. M. Howes Communications kits. Radio mounts. RSGB and ARRL publications. $1 for catalog. $4 shipping & handling.

{See also RadioKit, Oak Hills Research}

LITTLE GUYS:

Oak Hills Research
20879 Madison St.
Big Rapids, MI 49307
Send $1 for a flyer. Some parts, QST article kits, transceiver kits, QRP stuff in general (they inherited the stock from Small Parts Center when they closed).

Dan's Small Parts And Kits (Formerly KA7QJY Components)
1935 S. 3rd W. #1
Missoula MT 59801
(406) 543-2872

Send a business-size SASE for a current list of parts. RF parts, including vernier drives and air variables. $2.75 shipping, no minimum. Fast service, lots of satisfied customers.

R&R Associates
3106 Glendon Avenue
Los Angeles, CA 90034
(213) 474-1315 (res)
[Richard Rathburn, KB6NQ] "I mainly sell pc boards from QST, Radio Electronics, etc., and a few of in-house design. I also sell IC's, etc." Send a SASE every now and then for his most recent flyer. He also has boards for some Motorola Application Notes.

MANUALS:
Eico Electronic Instruments Co., Inc.
363 Merrick Rd
Lynbrook NY 11563
Note: No current kits, EICO manuals and schematics only

PUBLICATIONS:

NUTS & VOLTS MAGAZINE
430 Princeland Court
Corona CA 91719-9938
1-800-783-4624 (subscriptions)
1-714-371-3052 (subscribe by FAX)
All advertisements magazine (though they've just publishing small projects). Issues are $2.00 (at least, that's the price on the cover), subscriptions are (third class mail, USA:) $17/1 year, $31/2 years, (first class mail USA) $34/1 year, (Canada/Mexico) US$35, (other foreign, air mail) US$70, (other foreign, surface) US$39. A subscription also entitles you to one free classified ad of 40 words.

Ham Trader Yellow Sheets
PO Box 15142
Seattle WA 98115
"SUBSCRIPTIONS: U.S.: 24 Issues(1 yr) $16.50 50 Issues(2 yrs + 2 issues) $32. 75(3 Yrs + 3) $48. CANADA & MEXICO: 24/$20. 50/$39. 75/$58. FOREIGN: $38 a year sent Airmail. Published 2 ISSUES A MONTH sent 1st Class Mail... NO LONG WAIT FOR AD CIRCULATE! NOTE: A $4/4 issue MINI-SUBSCRIPTION may be ordered by potential subscribers, or WITH AN AD to qualify for the Special Subscriber Ad Rates given below:" Non-subscriber ads $1/{word,number,group} per insertion; subscribers: businesses or other for-profit sales $0.75 per word; ads involving items solely from or for your own use $0.35 a word; hamfest ads $0.35. Ads and ads with subscriptions should be sent to POB 10253 Sarasota FL 34278 during the winter; spring through fall they go to POBox 2057, Glen Ellyn IL 60138.

Howard W. Sams & Company
P.O. Box 7092
Indianapolis, IN 26207-7092
(800)-428-SAMS

Publishers of SAMS PHOTOFACTS and many other electronics books. There is an Annual Index of SAMS PHOTOFACTS whose cost I have forgotten. In-print Photofacts run between $14.95 to $39.95 (for computer Photofacts); they will photocopy out-of-print Photofacts for $11.95 + $2.50S&H for one page, plus $.55 per page thereafter.

RF Design Magazine
P O Box 1077
Skokie IL 60076-9931
(312) 762-2193
A magazine for professional RF designers. Subscriptions are $38 per year in the US, $48 in Mexico and Canada, $51 elsewhere, unless you appear to be a "qualified subscriber" (i.e. are in serious danger of convincing your company to buy a $12,000 spectum analyzer based on an ad) in which case it's free. Heavy on theory, and even the advertisement articles are educational.

Electronics Now (formerly Radio Electronics)
Subscription Service
P.O. Box 51866
Boulder CO 80321-1866
1-800-999-7139
A magazine for thumb-fingered electronics hobbyists. Subscription rate on the bingo card in the November issue (the latest I was able to dig up) was $19.97 per year.

Popular Electronics
Subscription Department
P.O.Box 338
Mt. Morris, IL 61054-9935
1-800-827-0383
Like Electronics Now. $18.95 according to the latest bingo card I see.

The Computer Applications Journal (Circuit Cellar INK)
P. O. Box 3050
Southeastern, PA 19398-9932
(203) 872-2204 (FAX)
This magazine is what Steve Ciarcia wanted BYTE to be when it grew up. It focuses on microcontroller applications and other digital projects.
$21.95 per year (12 issues, now) (Canada, Mexico: add $10 surface mail, $20 air mail; other countries: add $28.)

NOTES:

This file, and many others, are available for anonymous ftp from ftp.cs.buffalo.edu. It is also available from another anonymous ftp site, toxicwaste.mit.edu:/pub/archive/sci.electronics/Mail_Order_Companies. (Contact warlord@athena.mit.edu to offer things to the latter)

CHANGES FOR $Revision: 2.13 $

RadioKit is still without catalogs.
EasyTech has apparently gone under.
N&V prices went up.

According to the ARRL Kit List, Circuit Board Specialists are out of business.
KA7QJY has moved and changed the name of his business.

174. Re: Take this idea and run with it

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-15 20:23:12 UTC
From: blumb@sage.cc.purdue.edu
Message-ID: <CA83Ap.9Cp@mentor.cc.purdue.edu>
Source record: 119988

In article <CA6yvB.yA@athena.cs.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>Here's an idea I'd like to see someone develop.
>
>What is the cheapest home-built 2-meter transmitter that can be
>managed?
>

Oh man.....
If this idea ever gets rolling, I'll build it as my Very First Project.
:-)
But of course, I have to pass the license exam next month. :-)

--
Bill Blum blumb@sage.cc.purdue.edu Purdue University, W. Lafayette, IN
"Wherever you go....there's always a damn Buckaroo Banzai quote..."

175. Re: Active Mixers (MC1496 & NE602A)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 10:59:39 UTC
From: tsivula@lk-hp-12.hut.fi
Message-ID: <2261mr$fur@nntp.hut.fi>
Source record: 119991

In article <1139@auratek.COM> epacyna@auratek.COM (Edward Pacyna) writes:
>The 1496 does require additional parts for setting bias point, port termination
>and gain; but with this come advantages. The 1496 performance characteristics
>are much better documented in the data and app notes. The 1496 can easily be
>used with single rail power Supplies.

I Have built the 40m QRP rig described in October and November QST 1988. This article contained also faults, a FET had been changed to a BJT and the component layout was not complete. I got the rig working after mailing W1FB who is the author of the article in question.

This rig works fine but has a singly balanced mixer. Now I have got hold of a LM 1596 that is the military version of the LM1496. I would be very interested in getting the info about how using this device with a single 12V DC supply. The Signal output from the RX front end is through a transformer.

73, timo

176. CTCSS decoder chips availability ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 11:57:53 UTC
From: riku@juha.fi
Message-ID: <226541$294@juha.fi>
Source record: 119992
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

Hi,

I am currently searching for chips, which would decode CTCSS tones from audio signal.

The chip would be used in microprosessor-based repeater controller, so easy interfacing with processors is a plus.

Since these chips seem to be fairly hard to get (at least here in Finland), any pointers will be appreciated.

73,
--
-- Riku "the bit" Kalinen, Suomen Tietoverkkopalvelu Oy
-- Ham: OH2LWO (>= 50MHz)
-- X.400: G=Riku;S=Kalinen;O=juha;P=juha;A=mailnet;C=fi
-- "Welcome to the party, pal!" -- Bruce Willis in "Die Hard"

177. RE: ARCO variable capacitor specs or address

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 13:26:29 UTC
From: wade@kali.enet.dec.com
Message-ID: <226aa5INNeeg@usenet.pa.dec.com>
Source record: 119993

>Article 22 of rec.radio.amateur.homebrew:
>Subject: ARCO variable capacitor specs or address
>Sender: news@ee.ee.osaka-u.ac.jp

>Should anyone know the specifications {Cmin, Cmax, Vmax} of ARCO 365
>variable capacitor or postal address of ARCO, please tell me. This is
>actually my second post on the subject but I desperately need the info.
>Thanks in advance.
>
>masa

>QRZ? de JH3PRR

here is what I was able to find in a 1967 Newark Electronics Catalog:
ARCO was then Arco-Elmenco.

ARCO #	Min C	Max C
302	15	130 pf
303	65	340
304	100	550
305	190	760
306	275	970
307	350	1180
308	450	1390
309	550	1600
310	650	1890
311	780	2110
313	1150	2605
314	1300	2830
315	1400	3055

300 series rated 250 DCWV, 500 volts test

400	0.9	7 pf
402	1.5	20
403	3	35
404	8	60

420	1	12
421	2	25
422	4	40
423	7	100
424	14	150
425	24	200
426	37	250

427 55 300
428 70 350
429 90 400

460 1.5 15
461 2.7 30
462 5 80
463 9 180
464 25 280
465 50 380
466 80 480
467 110 580
468 140 680
469 170 780

400 series rated 175 DCWV, 350 volts test

178. RE:Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 15:09:11 UTC
From: richard@alaska.et.byu.edu
Message-ID: <ns$@byu.edu>
Source record: 119995

I got a couple of hem from Calogic Corp.
I think their number is 510-651-3025. I am reading it off of the data
sheet they faxed me. If it is their fax number send me e-mail and I
will look it up.

Richard

179. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 15:11:22 UTC
From: jfw@ksr.com
Message-ID: <29533@ksr.com>
Source record: 119996

markz@ssc.com (Mark Zenier) writes:
>Ed Burress (edbu@pogo.wv.tek.com) wrote:
>: I was thinking of using a LM1496 in a balanced modulator circuit,
>: but I remember hearing a few years ago that there were better
>: choices due to the large number of "support components" and split
>: supply needed with the 1496.
>Why does everyone use the National part number when
>Motorola was the original source?

Because DigiKey doesn't carry Motorola? ;-)

(Actually, I have found more single-quantity resellers carrying National
than Motorola, which is unfortunate since Motorola has so many neat parts
that I'd like less than 1000 of...)

180. Re: re: Take this idea and ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 15:34:39 UTC
From: Nguyent@snowmass.ksc.nasa.gov
Message-ID: <1993Jul16.103439.6831@titan.ksc.nasa.gov>
Source record: 119994

In article <CA7IDG.1zr@egr.uri.edu>, swamik@orca.NoSubdomain.NoDomain (Swami Kumaresan) says:
>
>
> I have a copy of "Modern Electronic Circuits" (I think thats the name).
> Ill give u the exact Auth, Title, ISBN if u want it. It has a schematic for a
> 100mw 2m transmitter with adjustable freq! The circuit uses 2 2N3904's and
> an inductor, 3 or 4 capacitors, and a few resistors, and a mic. It runs
> of 9VDC. Estimated cost: 6-7 dollars!!!!
>
> I have an HT, but maybe Ill try building it anyway. It probably will only a take
> 15 minutes to build once u have the supplies!
>
>
> 73s
> de KB1AMB/AA
>
> BTW - If u want title/auth/isbn send me email. My addr is at the end of msg
>
>
>
>
>_____
>
>Swami Kumaresan
>swamik@orca.ele.uri.edu
>swamik@morio.e-technik.uni-kl.de
>KB1AMB@KA1AZ.RI (Ham Radio BBS)
>kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)
>
>KB1AMB/AA Advanced Class Amateur Radio Operator
>I Monitor 147.165/.765 Repeater (WCARA in Rhode Island)
>& 20 meter band (SSB & CW)
>
>73s
>_____

I'm interested in the plans also. Is it possible for you to post, email, or
better yet fax a copy? TNX for the posting...

Tom
de KQ4OY
Kennedy Space Center - FL

181. Re: Take this idea and run with it

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-16 17:37:47 UTC
From: brant@seq.uncwil.edu
Message-ID: <1993Jul16.173747.13247@seq.uncwil.edu>
Source record: 119997

blumb@sage.cc.purdue.edu (Bill Blum) writes:

>In article <CA6yvB.yA@athena.cs.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>>Here's an idea I'd like to see someone develop.
>>
>>What is the cheapest home-built 2-meter transmitter that can be
>>managed?
>>
I don't see why you couldn't just replace the X-tals on
a walkie-talkie for RS for about 15 dollars total. 10 for the
radio and 3-5 for the X-tals. Granted it who only be one freq.
but it could be good for packet or a repeater if you could figure
a way to do the off set. I'm very interested in this idea but
have seen nothing in the mags about this nor about RS hand held
CBs having there X-tals replaced for 10 meter. But that may be because
CB is AM and we would be looking for FM (if I remember right)

CHuck, KD4ZPU

73

--
+---+
| Kilo Delta Four Zulu Papa Uniform -KD4ZPU 146.82 brant@seq.uncwil.edu |
+---+

182. Re: Take this idea and run with it

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-17 04:13:21 UTC
From: maessm@vccnw03.its.rpi.edu
Message-ID: <227u91$b2i@usenet.rpi.edu>
Source record: 119998

Newsgroups: rec.radio.amateur.homebrew
From: maessm@vccnw05.its.rpi.edu (Mat Maessen N2NJZ)
Path: vccnw05.its.rpi.edu!maessm
Distribution: world
Followup-To:
References: <CA6yvB.yA@athena.cs.uga.edu>
Reply-To: maessm@rpi.edu
Organization: Rensselaer Polytechnic Institute, Troy, NY.
Subject: Re: Take this idea and run with it
Keywords:

In article <CA6yvB.yA@athena.cs.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:

|> What is the cheapest home-built 2-meter transmitter that can be
|> managed?

|> Re-crystal a 49-MHz walkie-talkie and add a tripler?

This is probably the cheapest. For the cost of a crystal, a varactor diode (the tripler), some wire (coils for a low-pass filter), and a couple of caps, you could get a couple of millwatts out on 2. However, you'd have to use a scanner or equivalent receiver to receive it. Anybody have data on a TDA-7000? Rat shack was selling it a few years back, but I haven't seen it since. Uses an IF of about 60 kHz, so you can do IF filtering with RC networks. Might still have it at home. Have to look next time I'm there.

Another thing I've thought of doing is tapping off the LO of my scanner and mixing it up with a modulated signal.
--
Mat Maessen N2NJZ | maessm@rpi.edu
------------------------------ +----------------------------------
disclaimer: Anyone NOT singing will have a can of Foster's lobbed at
their heads.

(c) 1993 Fake-sig Co., Inc.

Newsgroups: rec.radio.amateur.homebrew
From: maessm@vccnw05.its.rpi.edu (Mat Maessen N2NJZ)
Path: vccnw05.its.rpi.edu!maessm
Distribution: world
Followup-To:
References: <CA6yvB.yA@athena.cs.uga.edu>
Reply-To: maessm@rpi.edu
Organization: Rensselaer Polytechnic Institute, Troy, NY.

Subject: Re: Take this idea and run with it
Keywords:

In article <CA6yvB.yA@athena.cs.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:

|> What is the cheapest home-built 2-meter transmitter that can be
|> managed?

|> Re-crystal a 49-MHz walkie-talkie and add a tripler?

This is probably the cheapest. For the cost of a crystal, a varactor diode (the tripler), some wire (coils for a low-pass filter), and a couple of caps, you could get a couple of millwatts out on 2. However, you'd have to use a scanner or equivalent receiver to receive it. Anybody have data on a TDA-7000? Rat shack was selling it a few years back, but I haven't seen it since. Uses an IF of about 60 kHz, so you can do IF filtering with RC networks. Might still have it at home. Have to look next time I'm there.

Another thing I've thought of doing is tapping off the LO of my scanner and mixing it up with a modulated signal.
--
Mat Maessen N2NJZ | maessm@rpi.edu
------------------------------ +----------------------------------
disclaimer: Anyone NOT singing will have a can of Foster's lobbed at
their heads.

(c) 1993 Fake-sig Co., Inc.

--
Mat Maessen N2NJZ | maessm@rpi.edu
------------------------------ +----------------------------------
disclaimer: Anyone NOT singing will have a can of Foster's lobbed at
their heads.

(c) 1993 Fake-sig Co., Inc.
----

183. Re: Converting 49 mhz stuff, and 6-meters questions

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-17 05:02:11 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCAALzn.H74@netcom.com>
Source record: 119999
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

I once took an AM supergenerative toy walkie talkie and replaced the 49MHz crystal to 50.585MHz. That freq was a crystal laying around in the junk box. Took it over to a ham friend's house, who had a 6M and 2M rig set up to do cross repeat. Had a QSO with the toy cross repeated to a 2M repeater to a random ham. Took a while to explain the equipment.

Should also be possible to make 10M toys by recrystaling old toy CB talkies.

184. how do electrolytic caps fail?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-17 17:10:59 UTC
From: kc6sss@catnip.berkeley.ca.us
Message-ID: <6334@catnip.berkeley.ca.us>
Source record: 120000

How do electrolytic caps fail? I have a scanner that I'm looking at where the input voltage to a 7805 regulator is about 2.2 volts. Clearly this isn't enough.

Do electrolytic caps fail by shorting perhaps? I'm trying to figure out what's turning 12V into 2.2V.

Thanks
Andrew

185. PROJECT 1: 40M QRP XMTR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-17 19:01:18 UTC
From: jherman@Hawaii.Edu
Message-ID: <CABou6.6u7@news.Hawaii.Edu>
Source record: 120001

From jeffrey@math.hawaii.edu Sat Jul 17 09:12:11 1993
Flags: 000000000001
Received: from knuth.math.hawaii.edu by kahuna.math.hawaii.edu (4.1/kahuna-MX-1.4b)
id AA09164; Sat, 17 Jul 93 09:12:08 HST
Received: by knuth.math.hawaii.edu (4.1/knuth-CLIENT-1.3)
id AA05460; Sat, 17 Jul 93 09:11:59 HST
Date: Sat, 17 Jul 93 09:11:59 HST
From: jeffrey@math.hawaii.edu
Message-Id: <9307171911.AA05460@knuth.math.hawaii.edu>
To: jherman@uhunix.uhcc.hawaii.edu
Subject: p1

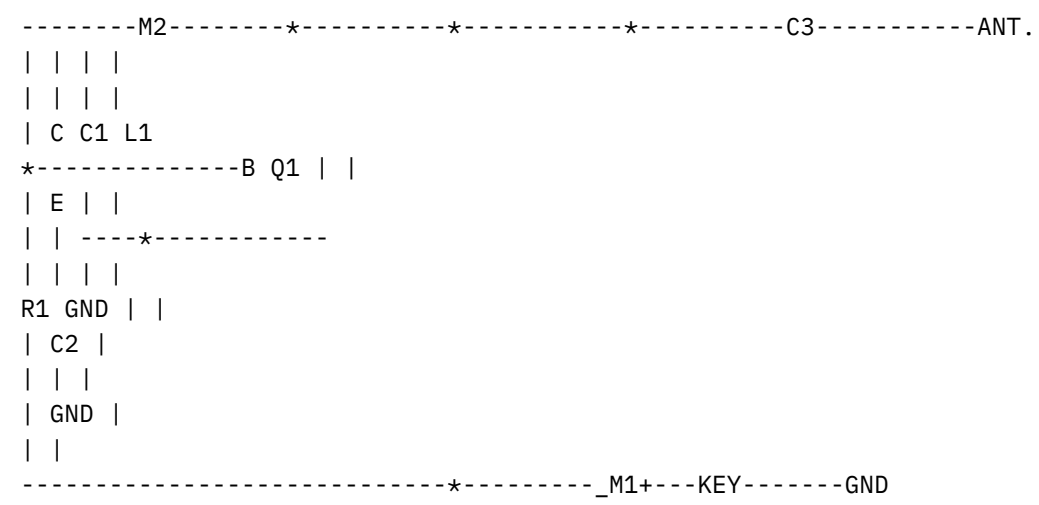
Hi Gang,
Here is the first of many very SIMPLE QRP transmitters. I make no
claims to their performance! In the next few weeks I'll give you xmtrs
for 80, 40, 20, and 2 meters; most requiring 3 or less transistors.
The circuits come from 2 out-of-print ham projects books (c. 1968) so
I will assume there will be no copyright problems.
Project 1 is a simple 40 meter xmtr; it should only take 15 minutes
to build it (if you've got the parts). I wasn't able to draw the symbol
for each part on this terminal, so I put the part number in it's
place. Hope you don't mind... Note that the case of Q1 should be
grounded. Here's the text for this project, taken from "101 EASY
HAM RADIO PROJECTS" by Robert M. Brown, k2zsq/w9hbf and Tom Kneital,
k2aes/wb2aai:

"Want to really shake up your next contact? Just tell him you are
using this one-transistor CW rig! Most Novices and other hams shy
away from these little gems thinking they are hopelessly underpowered.
Not so! More than 50 contacts - all located over 75 miles distant -
have been logged with this rig connected to the backyard longwire!
"Construction is quite simple and, in fact, there is not much to
say about it. Reason: there isn't very little that can go wrong!
"L1 should be adjusted for maximum deflection on an FSM as the
key is depressed. Crystal should be a fundamental frequency type
for 40-meter operation."

Parts list:

C1 68 pF capacitor
C2 .015 uF capacitor
C3 10 pF capacitor
L1 25 turns of No. 26 enameled wire wound on a 3/8 in. slug-
tuned form (National XR-91 or equiv.)
M1 4.5 volt battery

M2 40-meter fundamental freq. crystal
Q1 GE-9 transistor
R1 91K resistor



That's it! Note that GND = ground (and note the polarity of M1).
For Q1, I've labelled its leads B = base, C = collector, E = emitter.
* indicates a junction of 3 or more leads.
Remember, no flames if it doesn't work; I'm just the messanger!
Project 2 will be an 80M VFO QRP xmtr; stay tuned. (Oh yes, there
IS a 2M xmtr on the way).

Jeff, NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@Hawaii.Edu

186. FT411e VOX... HELP!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-17 23:32:16 UTC
From: ahall@ux4.cso.uiuc.edu
Message-ID: <CAC1Dt.24p@news.cso.uiuc.edu>
Source record: 119927

Hello!,

I was wondering if anyone out there has played around w/ the Yaesu FT411e internal VOX. I am looking for a way to "create" my own vox headset for use w/ my bycicle helmet (useful for long rides), and was very curious as to the extent of the vox circuitry in my 411e. The manual explicitly says to purchase the "YH-2" (i think) headset which I was sort of "eyeing" because I am in need of a very light-weight headset (I've got an easily made idea in my head) and was speculative on how well the yh-2 headset would fit between my head and my helmet. If you have any ideas, I would very much like to hear them, and look forward to them w/ enthusiasm! THANKS AHEAD OF TIME!!!

73's
Allen Hall N9RZC
email to:
n9rzc@uiuc.edu
-or-
ahall@uiuc.edu

187. Needed: Schematic of HP 204B oscillator

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 02:09:09 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CAC8n9.9qK@athena.cs.uga.edu>
Source record: 120002
Cross-posted to: sci.electronics,rec.radio.swap,rec.radio.amateur.homebrew

Can anybody out there supply me with a schematic of a Hewlett-Packard 204B oscillator? (That's a low-distortion sine wave source, to be precise.)

I bought an apparently dead one at a hamfest today.

Thanks. I'll be glad to reimburse Xeroxing and postage.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

188. Electrolytic caps

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 08:21:59 UTC
From: clifto@indep1.UUCP
Message-ID: <2359@indep1.UUCP>
Source record: 120003

In article <6334@catnip.berkeley.ca.us> kc6sss@catnip.berkeley.ca.us (Andy) writes:
:How do electrolytic caps fail? I have a scanner that I'm looking at
:where the input voltage to a 7805 regulator is about 2.2 volts. Clearly
:this isn't enough.
:
:Do electrolytic caps fail by shorting perhaps? I'm trying to figure out
:what's turning 12V into 2.2V.

'Lytics fail by opening, by shorting, and in some types by leaking (the
electrolyte actually leaks out... rare in today's caps but still possible).
You HAVE, of course, disconnected the 7805 to make sure that IT is not
the problem...? Made sure you don't have a shorted rectifier that's making
an AC voltage appear at your meter and _looking_ like 2.2V? Measured the
output of your line transformer?
Good luck.
--
+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

189. What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 13:43:53 UTC
From: at626@cleveland.Freenet.Edu
Message-ID: <22bk2p$6ht@usenet.INS.CWRU.Edu>
Source record: 120004
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.packet

What kind of equipment is needed to build & tune a Ramsey 146? Basically, is this a kit you can solder together and go, or do yuo need an oscilliscope, freq meter, swr meter, etc to have it working right? I was thinking of building it and listening while I work on my license, then using the xmit side. Good idea, or should I go commercial for a first rig? Also, how does it work with packet?

Thanks for the pointers,

dave.

--
Dave Strout <at626@cleveland.freenet.edu>

190. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 17:43:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <18JUL199318434672@siva.bris.ac.uk>
Source record: 120005
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.packet

In article <22bk2p$6ht@usenet.INS.CWRU.Edu>, at626@cleveland.Freenet.Edu (Dave Strout) writes...
>
>What kind of equipment is needed to build & tune a Ramsey 146? Basically,

That's the 2m receiver isn't it? I built one last weekend, and it went pretty well. (BTW, I have years of experience in digital electronics, but this was my first VHF radio, and my first alignment job).

>is this a kit you can solder together and go, or do yuo need an

Not bad to assemble. 3 chips (NE602 (1st mixer/osc) , MC3359 (2nd mixer/osc/IF strip), LM386 (Audio amp)), 4 transistors (RF amp, 1st IF amp, AFC, stabiliser), and about 60 passives. Varactor tuning.

>oscilliscope, freq meter, swr meter, etc to have it working right? I was

Well, you certainly don't need an SWR meter for a receiver. The frequency counter (if it covers 10.7Mhz higher than the desired frequency i.e. 154.7 MHz) would be useful to set up the 1st osc (This is a dual superhet design, the 1st osc beats the signal down to 10.7Mhz, and then the 2nd to 455kHz). The second Osc is a xtal, and both IFs are ceramic filters, so there is no alignment there. I used my 'scope (Tekky 555 with 1S1 plug-in) which has a 1GHz sampling input, but I didn't really need it.

The instructions suggest finding a local Ham to transmit a test signal to you and then tuning to receive it. That would work. Simply tuning the coil until you hear the local repeater (or digipeater) works also.

>thinking of building it and listening while I work on my license, then

I have my license, but no equipment. I think this should be a good start for repeater/packet working.

>using the xmit side. Good idea, or should I go commercial for a first rig?
> Also, how does it work with packet?

Not tried it yet, but I can certainly hear the local digipeater. I need a better aerial (I have a couple of bits of wire as a dipole) before I have any hope of decoding it, but it sounds possible

I think commercial equipment is outside the spirit of amateur radio. I'm going to home-brew everything!.

>
>Thanks for the pointers,
>

>dave.
>
>--
>Dave Strout <at626@cleveland.freenet.edu>

-tony
BTW, it worked first time!. I'll recomend the kit to others.

191. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 19:45:08 UTC
From: apollo@io.org
Message-ID: <22c984$7o@ionews.io.org>
Source record: 120006

In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
>
>Ed Burress (edbu@pogo.wv.tek.com) wrote:
>: I was thinking of using a LM1496 in a balanced modulator circuit,
>: but I remember hearing a few years ago that there were better
>: choices due to the large number of "support components" and split
>: supply needed with the 1496.
>
>Why does everyone use the National part number when
>Motorola was the original source?
>
>Mark Zenier markz@ssc.wa.com markz@ssc.com
>
>

Ok here goes MC1496. Happy?

Andrew
(But why can't we get any of the example circuits in the Motorola Data book to work hmmmm)

--
apollo@io.org

There once was a man from Nantuckett, who always carried a bucket... never mind.

192. Size (was Re: What equipment to tune up a Ramsey 146?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-18 20:40:16 UTC
From: jfh@netcom.com
Message-ID: <jfhCADo34.5Hv@netcom.com>
Source record: 120007
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.packet

ard@siva.bris.ac.uk (PDP11 Hacker .....) wrote:

>>What kind of equipment is needed to build & tune a Ramsey 146? Basically,
>
>That's the 2m receiver isn't it? I built one last weekend, and it went pretty
>well. (BTW, I have years of experience in digital electronics, but this was my
>first VHF radio, and my first alignment job).

There have been a few messages recently about how to make a 6-meter handheld, given that the commercial choices are either expensive or less than wonderful. Assuming that the Ramsey 6-meter transceiver is the same size as the 2-meter, do you think it would be possible to make a 6-meter HT from a Ramsey kit? Is it small enough and durable enough?

--

Jack Hamilton jfh@netcom.com kd6ttl@n0ary.#nocal.ca.us.na (AMPR)
Post Office Box Box 281107 San Francisco, California 94128 USA

193. Re: MFJ 20m CW XCVR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 00:19:10 UTC
From: f_speerjr@ccsvax.sfasu.edu
Message-ID: <1993Jul18.181911.5769@ccsvax.sfasu.edu>
Source record: 120008

In article <CA7IIG.224@egr.uri.edu>, swamik@orca.ele.uri.edu (Swami Kumaresan) writes:
> I am planning to buy an MFJ QRP tranceiver for either 40m,20m,or 17m.
> Which band is the best for QRP? I will be using 5 watts thru an MFJ 949D Tuner
> and a Van Gorden 102ft G5RV kit.
>
> tnx
> --
>
> Swami Kumaresan
> swamik@orca.ele.uri.edu
> swamik@morio.e-technik.uni-kl.de
> KB1AMB@KA1AZ.RI (Ham Radio BBS)
> kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)
>
> KB1AMB/AA Advanced Class Amateur Radio Operator
> I Monitor 147.165/.765 Repeater
> & 20 meter band (SSB & CW)
>
> 73s
> --

What about 30m? That's the band that would get my vote with a declining sunspot
count, and I truly love my MFJ 30m qrp rig.

James R. Speer Phone: 409 568 1478
Department of Psychology Fax: 409 568 2190
Stephen F. Austin State University E-mail: F_SPEERJR@ccsvax.sfasu.edu
Nacogdoches TX 75962-3046 Ham Radio: K5YUT

194. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 03:47:59 UTC
From: markz@ssc.com
Message-ID: <1993Jul19.034759.6378@ssc.com>
Source record: 120009

Andrew P. Herdman (apollo@io.org) wrote:
: In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
: >
: >Ed Burress (edbu@pogo.wv.tek.com) wrote:
: >: I was thinking of using a LM1496 in a balanced modulator circuit,
: >: but I remember hearing a few years ago that there were better
: >: choices due to the large number of "support components" and split
: >: supply needed with the 1496.
: >
: >Why does everyone use the National part number when
: >Motorola was the original source?
:
: Ok here goes MC1496. Happy?
:
: (But why can't we get any of the example circuits in the Motorola Data book to
: work hmmmm)

'cause it's really a pretty miserable part. Twiddle this pot, hold your
tounge just right, and if the temperature doesn't change ....

Mark Zenier markz@ssc.wa.com markz@ssc.com

195. Re: Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 08:48:30 UTC
From: zlau@arrl.org
Message-ID: <1750@arrl.org>
Source record: 119924

In rec.radio.amateur.homebrew, richard@alaska.et.byu.edu
(Richard B. Christensen) writes:
>Is there an advantage in using the SD8601 over using a mixer from
>MiniCircuits. It seems that you still need two transformer for the

Yes, many people have been able to use the SD8901/SI8901 in optimized narrow band circuits to get improved performance over typical broadband circuits using the Mini circuits mixers. An excellent application is the ultimate 14.0 to 14.10 MHz receiver. Nobody has been able to develop a wideband synthesizer that matches a well designed LC oscillator in terms of both phase noise and spurious signals.

>SD8601, and making them wideband might be a problem. Even the xfmers
>form Minicircuits have a limited bandwidth. There are several mixers
>from MC that cost about $5-10 that don't need the additional
>transformers and they can cover from DC to 500-1000 MHz and higher.
>Does anyone have any comments? Why not use one wideband component
>than several components if the cost is equivalent?

While all receivers are compromises, wideband receivers are worse. For instance, if only are interested in listening to 100 kHz of 20 meters, it *is* possible to eliminate receiver flaws like birdies. (fake signals generated internally by the receiver). Often, switching circuits will add noise and distortion. Or, the additional circuitry will make the layout worse, causing unwanted circuit interactions.

Besides, for some of us homebrewing is a way to get *exactly* what we want, rather than what the manufacturers have decided will be the most popular.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

196. Re: Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 09:39:07 UTC
From: dstock@hpqmoca.sqf.hp.com
Message-ID: <CAEo58.1Gr@hpqmoea.sqf.hp.com>
Source record: 120010

You can just wire up the SD5000 into the same configuration. I believe it is a current (time not amps !) device.

One of these articles involves running a 74HC off of about 9v, far over its absolute max rating. Expect different brands to vary in life expectancy !

Cheers
David GM4ZNX

197. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 12:53:58 UTC
From: ae517@Freenet.carleton.ca
Message-ID: <CAEx5y.IuK@freenet.carleton.ca>
Source record: 120011

In a previous article, at626@cleveland.Freenet.Edu (Dave Strout) says:

>
>What kind of equipment is needed to build & tune a Ramsey 146? Basically,
>is this a kit you can solder together and go, or do yuo need an
>oscilliscope, freq meter, swr meter, etc to have it working right? I was
>thinking of building it and listening while I work on my license, then
>using the xmit side. Good idea, or should I go commercial for a first rig?
> Also, how does it work with packet?
>
>Thanks for the pointers,
>
>dave.
>
>--
>Dave Strout <at626@cleveland.freenet.edu>
>
Hi, Fellow Freenet citizen!

You need *minimal* equipment to tune up the FX146. I used my HF receiver
to make sure the xtal oscillator was working, and a Radio Shack HF VSWR
meter to peak up the output. You *can* use off the air signals to ensure
the receive side is working OK. A multi-meter would be an asset, as well,
for checking your work for cold solder joints, verifying resistor values,
etc.

>using the xmit side. Good idea, or should I go commercial for a first rig?

Well, finding an older serviceable rig at a flea market could be cheaper,
but building the FX146 is a good learning experience for new hams, IF you
take the time to read the construction manual, which is very well written,
and gives a blow by blow description of each stage in easy-to-understand
language. But if you're in a big rush to get hamming, try to find a
good used rig. There's nothing worse than rushing through a construction
project, especially your first, and not having the ^%@#&*%!! work!

73 de ve3uav

--

198. Re: Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 13:43:16 UTC
From: dnewkirk@arrl.org
Message-ID: <1740@arrl.org>
Source record: 120012

In rec.radio.amateur.homebrew, match@ (Marvin Match) writes:

>In the Feb QST is an article about a high dynamic reange receiver front end
>using the Siliconix Si8601. (from memory, my apologies if I missed the
>number)

Is Si8901.

>
>The article also states that Siliconix has ceased production of this mixer,
>but that another company (whose name escapes me) is producing a direct
>replacement labeled SD8601.

Likewise, SD8901.

>Anyone know of a source for either of these mixers?

Here's some text from the information template package available
from ARRL HQ about that article:

Errors and Amplifications

Transformers T3, T4, T7 and T8, called out in the Parts List
as Mini-Circuits T1-1T (tapped secondary) units, can be T1-1
(untapped secondary) units in this application. As called out
in the Parts List, transformers T1 and T2 are indeed
Mini-Circuits T4-1 units, and (per Mini-Circuits) have
center-tapped secondaries despite the untappedness seemingly
implied by the absence of the suffix T in their model
designator.

The circled numbers in the upper object in Fig 9 appear in
incorrect order (12345). Configuring T5, T6, T9 and T10 this
way turns the pre- and post-amplifiers into oscillators. The
correct order is 12543.

The Si8901's design originated with Robert Zavrel, W7SX, and
not Ed Oxner, KB6QJ, as stated in the text. The spectrum
display on the article title page may be confusing because
its caption does not fully characterize the conditions under
which the photo was obtained: at the mixer output, without
the preamplifier, and with mixer loss added. The template
package details the calculations.

Where Can I Get a Calogic SD8901 Mixer IC?

The SD8901 mixer originally saw the light of day as the
Siliconix Si8901. Ownership and manufacturer of the part was

sold to the Calogic Corporation--

Calogic Corporation
237 Whitney Pl
Fremont CA 94539
telephone 510-656-2900
fax 510-651-3025

--which renumbered it SD8901. According to a June 24, 1992, press release, the SD8901 is "available in 100-piece minimum quantities for $3.15, 1k for $2.86"-- beyond the reach of many Amateur Radio experimenters. I understand, however, that a limited number of SD8901s is available to experimenters free of charge as engineering samples. For information on SD8901 availability in this context, contact Ronda Damon, Calogic Customer Service, at the voice or fax number listed above.

What About Using a Part Other than the SD8901?

The SD8901 consists of a DMOS FET quad cross-connected into a ring configuration suitable for wideband double-balanced mixing. Among other components, Calogic also manufactures and markets the SD5000 series--DIP quads of uncommitted DMOS FETs (on a common substrate) electrically similar to those in the SD8901. I know of at least one receiver manufacturer using the SD5000 series in a high-level LF/MF/HF mixer, so these parts are clearly worth investigating as a substitute for the SD8901.

(end of text from the template package)

Fellow ARRL staffer Zack Lau received a bit more on SD8901 availability from Steve Willard, N1KLR: "I have uncovered an easy path to obtain these very nice mixers. Contact Ann Brave at Solid State Inc. 46 Ferrand St. Bloomfield, N.J. 07003-8683. 1-800-631-2075. They represent Calogic, (510)656-2900, the manufacturer of the devices. SSI can send a current catalog of Calogic components, some of which you should be aware. SSI stocks the part, renamed the SD8901. I was able to obtain both surface mount and through-hole parts without any problem."

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

199. Contemporary Electronic Circuits (Re: take this idea...)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 13:54:34 UTC
From: swamik@orca.NoSubdomain.NoDomain
Message-ID: <CAEzyz.5JJ@egr.uri.edu>
Source record: 120013

Hi All!

I have the book somewhere at home. Its called Contemporary Electronic Circuits. Ill post the ISBN, AUth etc hr tommorow because Ive received 20 requests, yes 20, for it. The book contains 100s of ham radio related schematics from perviuos issues of 73, CQ , QST, etc...

73s
de KB1AMB/aa

Swami Kumaresan
swamik@orca.ele.uri.edu
swamik@morio.e-technik.uni-kl.de
KB1AMB@KA1AZ.RI (Ham Radio BBS)
kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)

KB1AMB/AA Advanced Class Amateur Radio Operator
I Monitor 147.165/.765 Repeater
& 20 meter band (SSB & CW)

73s

---

200. Motorola Micor Conversion

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 14:25:56 UTC
From: don@grc.genroco.com
Message-ID: <1993Jul19.142556.13361@genroco.com>
Source record: 120014
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

A bunch of us were able to obtain some Motorola Micor units previously
used locally by the police at about 150Mhz. Does anyone know what
is required to get these units working on 2m? Please send me any
info you might have.

Thanks and 73,

Donald D. Woelz, K9GR Office Phone: 414-644-8700
GENROCO, Inc. K9GR @WB9TYT.#MKE.WI.USA.NOAM
205 Kettle Moraine Drive North k9gr@k9gr.ampr.org [44.92.1.48]
Slinger, WI 53086 U.S.A. don@genroco.com
--
Donald D. Woelz Office Phone: 414-644-8700
GENROCO, Inc. Toll Free: 800-243-6762
205 Kettle Moraine Drive North Office Fax: 414-644-6667
Slinger, WI 53086 U.S.A. 24 hr Voicemail: 414-322-3891

201. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 14:46:08 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <22ec3g$qu5@news.acns.nwu.edu>
Source record: 120015
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.packet

In article <22bk2p$6ht@usenet.INS.CWRU.Edu> at626@cleveland.Freenet.Edu (Dave Strout) writes:
>
>What kind of equipment is needed to build & tune a Ramsey 146? Basically,
>is this a kit you can solder together and go, or do yuo need an
>oscilliscope, freq meter, swr meter, etc to have it working right? I was

A RF signal generator with FM modulation that will go down to a fraction
of a microvolt is very handy for peaking up the receiver.

This is assuming that all goes ok. If you have problems, like I did,
you will definitely need Maalox or Rolaids - your choice.

Almost everyone that has built these has had to tweak the coils -
spread them out and so on. In addition, I had an incomplete kit that took
two tries and 6 weeks to correct, bad crystals (wrong load pf),
and blown first mixer (shipped without protective ring). It took quite
a while to get it to put out 6w and have adequate receiver performance.

>thinking of building it and listening while I work on my license, then
>using the xmit side. Good idea, or should I go commercial for a first rig?
> Also, how does it work with packet?

The positives:
I learnt how to work with a 2m tranceiver and get it to work.
I learnt to find bad components: mixers and crystals.

The negative:
Cost. With enclosure it cost $176 + shipping.
Also consider the competition.
You can buy a brand new Alinco DR1200 for $225. (or a used one for
$175). It comes with display, zillions of channels, pl encode/decode,
25W and is much smaller. (DTMF Mic is extra - $33).
I think that $100 with a case, mic and PL would be a fair price for the
Ramsey. As it is, it does not include a mic, PL or DTMF. Plus
it has to built with somewhat cheesy components.

Take your pick and best of luck.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

202. Re: Size (was Re: What equipment to tune up a Ramsey 146?)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 14:46:46 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Jul19.144646.24110@mnemosyne.cs.du.edu>
Source record: 120017

[I removed rra.packet from the newsgroups, since this ain't packet anymore.]

jfh@netcom.com (Jack Hamilton) writes:

>There have been a few messages recently about how to make a 6-meter
>handheld, given that the commercial choices are either expensive or less
>than wonderful. Assuming that the Ramsey 6-meter transceiver is the same
>size as the 2-meter, do you think it would be possible to make a 6-meter
>HT from a Ramsey kit? Is it small enough and durable enough?

I didn't know that Ramsey offered a 6-meter rig. They were at the Atlanta hamfest (the high point of the 'fest, IMHO) and I bought a 440 transceiver kit there. The 2-meter kit is the same size, and I wouldn't call it small enough for an HT -- but I've been thinking about its possibilities as a belt-mounted portable. The hardest part would be mounting an antenna.

As for durability, the whole thing is built on a single sturdy-looking board, but IMHO (again) durability is a function of the case you put it in. Moisture-proofing may be a Good Idea if you want to use it outdoors. They *are* very easy to mod, as evidenced by the number of articles I've seen in 73 and other mags.

--
Larry Kollar, KC4WZK | Dad to "The Wrecking Crew:"
lkollar@nyx.cs.du.edu | Mikel, 1/13/88 and Julia, 10/14/89

203. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 15:02:01 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <22ed19$ra1@news.acns.nwu.edu>
Source record: 120016

In article <CAEx5y.IuK@freenet.carleton.ca> ae517@Freenet.carleton.ca (Russ Renaud) writes:

A few lines deleted for brevity...

>Well, finding an older serviceable rig at a flea market could be cheaper,
>but building the FX146 is a good learning experience for new hams, IF you
>take the time to read the construction manual, which is very well written,
>and gives a blow by blow description of each stage in easy-to-understand
>language. But if you're in a big rush to get hamming, try to find a

Huh! The manual must have been rewritten. While it has excruciating details of placement of resistors, soldering techniques and cautions you about flying clipped leads, it leaves you in the dark in the parts that really matter. To wit: Receiver Alignment: (from memory)

Adjust Lxxx and Lxxx till you hear a peak in the noise. If you like it then you are done. (words from manual as closely as I can remember it.)

Hey! What if you do *not* like it?
What then? The manual is silent.

The xmtr section is no better.

So yes indeed, the manual has pages and pages of details. On parts placement. But is sadly devoid of any real troubleshooting/alignment instructions.

Please do note that I do not write this out of frustration. I got the Ramsey to put out a reasonably clean 6W and got the receiver MDS down to 0.2uv. It is just that I do not think that Ramsey's kit is particularly good or well priced.

Also, BTW, I had one of their earlier kits. Purchased in Oct/Nov 1991. They have changed it since.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

204. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 15:04:28 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jul19.150428.104131@locus.com>
Source record: 119919

In article <CAEx5y.IuK@freenet.carleton.ca> ae517@Freenet.carleton.ca (Russ Renaud) writes:
>
>In a previous article, at626@cleveland.Freenet.Edu (Dave Strout) says:
>
>>
>>What kind of equipment is needed to build & tune a Ramsey 146? Basically,
>>is this a kit you can solder together and go, or do yuo need an
>>oscilliscope, freq meter, swr meter, etc to have it working right?

>You need *minimal* equipment to tune up the FX146. I used my HF receiver
>to make sure the xtal oscillator was working, and a Radio Shack HF VSWR
>meter to peak up the output. You *can* use off the air signals to ensure
>the receive side is working OK. A multi-meter would be an asset, as well,
>for checking your work for cold solder joints, verifying resistor values,
>etc.

My experience with home-built VHF gear suggests you *really need* to verify the purity of your transmitted signal using a spectrum analyzer. The variation I've seen from one person to another assembling kits raises the very real possibility that one could build a kit, check it out on the local repeater, and think everything is fine, but really be generating a signal that contains many undesired and illegal spurious outputs.

I know I sound like a spoil-sport, but Ramsey kits in general make me suspicious that even the properly built kits reliably meet the -60dBc/ 25 uW max limit for spurious output on a 2m rig....

You really should check. You can probably ask local hams who has access to spectrum analyzer and eventually find one....

Good luck!

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

205. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 16:24:18 UTC
From: lehane@sni.co.uk
Message-ID: <1993Jul19.162418.3734@sni.co.uk>
Source record: 119920

Mark Zenier (markz@ssc.com) wrote:
: Andrew P. Herdman (apollo@io.org) wrote:
: : In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
: : >
: : >Ed Burress (edbu@pogo.wv.tek.com) wrote:
: : >: I was thinking of using a LM1496 in a balanced modulator circuit,
: : >: but I remember hearing a few years ago that there were better
: : >: choices due to the large number of "support components" and split
: : >: supply needed with the 1496.
: : >
: : >Why does everyone use the National part number when
: : >Motorola was the original source?
: :
: : Ok here goes MC1496. Happy?
: :
: : (But why can't we get any of the example circuits in the Motorola Data book to
: : work hmmmm)

: 'cause it's really a pretty miserable part. Twiddle this pot, hold your
: tounge just right, and if the temperature doesn't change ....

Hmmm, well the Icom 202 (old 2m SSB much respected rig!) uses it as well.
I still have mine and it works FB.

--
Lehane Kellett. G8KMH. Siemens Nixdorf Information Systems, Bracknell.
lehane@siesoft.co.uk NTS: g8kmh@gb3xp amprnet: g8kmh@g8kmh.ampr.org
Standard disclaimers apply. Warranty void if opened.

206. Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 16:40:06 UTC
From: richard@alaska.et.byu.edu
Message-ID: <nt$@byu.edu>
Source record: 119918

Is there an advantage in using the SD8601 over using a mixer from MiniCircuits. It seems that you still need two transformer for the SD8601, and making them wideband might be a problem. Even the xfmers form Minicircuits have a limited bandwidth. There are several mixers from MC that cost about $5-10 that don't need the additional transformers and they can cover from DC to 500-1000 MHz and higher. Does anyone have any comments? Why not use one wideband component than several components if the cost is equivalent?

Richard

207. Re: Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 17:40:12 UTC
From: dermer@ssd.intel.com
Message-ID: <CAFAF0.Ep4@SSD.intel.com>
Source record: 119921

In article <nt$@byu.edu>, richard@alaska.et.byu.edu (Richard B. Christensen) writes:

|> Is there an advantage in using the SD8601 over using a mixer from
|> MiniCircuits. It seems that you still need two transformer for the
|> SD8601, and making them wideband might be a problem. Even the xfmers
|> form Minicircuits have a limited bandwidth. There are several mixers
|> from MC that cost about $5-10 that don't need the additional
|> transformers and they can cover from DC to 500-1000 MHz and higher.
|> Does anyone have any comments? Why not use one wideband component
|> than several components if the cost is equivalent?
|>
|>
|> Richard

Without actually pulling my Mini-Circuits data book out, I believe
the $5-10 mixers you mention have IP3 figures considerably lower than
the 38-40 dBm spec'ed for the 8701/8901. The conversion loss seems to
be a bit lower for the Mini-Circuits mixers, however.

Does anyone know whether the application notes mentioned in the article
are still available and if so, from whom? (Siliconix or Calogic or ...)

Greg WA9WUM

dermer@ssd.intel.com

208. Ramsey 146

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 18:26:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <19JUL199319263904@siva.bris.ac.uk>
Source record: 119922

There appears to be some confusion (possibly started by me) as to what the Ramsey 146 postings were refering to. The kit that I built last weekend, and that I was satisfied with was the FR-146 which is a 2m receiver. It appears that others are refering to the FX-146 transceiver, which is not easily available in the uk (the FR-146 is available from Maplin). I have not built the FX-146, but may do in the future.

Somebody else mentioned incorrect component values. Yes, I had some of those - all my 10uF capacitors were 4.7uF (it would probably have worked, but I got the right ones anyway), and a 22pF capacitor was marked 2.2pF, and measured <10pF on my tester. That was more serious, as the 2nd oscillator would not run with 2.2pF, so you'd get no signals. A 22pF worked fine though.

Has anyone tried to modify the FR-146? I am wondering about
a) replacing the volume control with a log pot
b) using a multi-turn pot for the tuning control - it's just too sensitive at the moment
c) more major. I have a Philips TSA5511T frequency synthesiser IC in my spares box - it claims to accept an oscillator up to 1.3GHz, and be controlled through the I2C bus. I'm wondering about hooking one to the NE602 in the FR146 and thus making it synthesised and computer controlled. What thinks the Net?

-tony

209. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 19:33:45 UTC
From: lkraft@core.rose.hp.com
Message-ID: <CAFFo9.IB5@icon.rose.hp.com>
Source record: 119923

Dana H. Myers (dana@lando.la.locus.com) wrote:

(stuff deleted)
: >
: >My experience with home-built VHF gear suggests you *really need* to verify
: >the purity of your transmitted signal using a spectrum analyzer. The
: >variation I've seen from one person to another assembling kits raises the
: >very real possibility that one could build a kit, check it out on the
: >local repeater, and think everything is fine, but really be generating
: >a signal that contains many undesired and illegal spurious outputs.
: >

This is _VERY_ good advice. I built the FX-440 (440 MHz FM
transceiver) and found that it's design left a lot to be desired.
There was so much L.O. radiation off the PCB that just moving your
tools around on the bench would pull the VCO. And it also coupled
back into the PLL circuitry so much that the spectrum consisted of
a carrier with 25 kHz spurs on both side out to several hundred
kilohertz with the first pair being only -25 dBc. I ended up
having to fabricate a metal cover for the L.O. and divider, and
this cleaned things up nicely. The designer didn't seem to pay
much attention to ground loops/returns.

Not to mention that several parts were missing, and opening the
squelch causes an obnoxious 'pop', ...

: >
: >I know I sound like a spoil-sport, but Ramsey kits in general make me
: >suspicious that even the properly built kits reliably meet the -60dBc/
: >25 uW max limit for spurious output on a 2m rig....
: >

I'd be surprised if it was this good. For the price it wouldn't be
such a bad deal if they were more careful with the design.

73,

L

==========
Lyle Kraft AA6LK
########################## Hewlett-Packard
/_ _ ###### System Interconnect Lab -
/ / /_/ ##### Information Networks Division
/ ###### Roseville, CA 95747
########################## 916-785-5798
lkraft@core.rose.hp.com

==========

210. Re: Ramsey 146

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 20:13:26 UTC
From: jbs@ee.ee.duke.edu
Message-ID: <17903@news.duke.edu>
Source record: 119925

In article <19JUL199319263904@siva.bris.ac.uk> ard@siva.bris.ac.uk (PDP11 Hacker .....) writes:
>There appears to be some confusion (possibly started by me) as to what the
>Ramsey 146 postings were refering to. The kit that I built last weekend, and
>that I was satisfied with was the FR-146 which is a 2m receiver. It appears
>that others are refering to the FX-146 transceiver, which is not easily
>available in the uk (the FR-146 is available from Maplin). I have not built the
>FX-146, but may do in the future.

I built the FR-146 this weekend - except for the NE602 IC (mixer/detector/
oscillator), which was absent from the package. My first kit - took about
5 hours (not bad for a newbie, I suppose). I was really impressed with the
quality of the insructions, the PC board, and all the parts but one being
there (I'd prefer that they had left out, say, a 10K resistor instead ;-)
and being at least close enough to the right values.

From the text in the manual it doesn't look as if any special equipment
is required - just a signal source and some inductor-tuning tools.
Let me know how yours works - I'll post my results when the chip shows up.

>Somebody else mentioned incorrect component values. Yes, I had some of those -
>all my 10uF capacitors were 4.7uF (it would probably have worked, but I got the
>right ones anyway), and a 22pF capacitor was marked 2.2pF, and measured <10pF
>on my tester. That was more serious, as the 2nd oscillator would not run with
>2.2pF, so you'd get no signals. A 22pF worked fine though.

I had the correct 22pF cap, but as in your case, what should have been 10uF
caps were 4.7 in my kit. When I called to talk about the missing IC I asked
them about the caps and they said the 4.7uF caps work just fine.

-joe
--
You spend the night
Like you were spending a dime
- Lyle Lovett

211. Re: Si8601 & SD8601

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 20:56:27 UTC
From: dnewkirk@arrl.org
Message-ID: <1756@arrl.org>
Source record: 119929

In rec.radio.amateur.homebrew, richard@alaska.et.byu.edu (Richard B. Christensen) writes:

>Is there an advantage in using the SD8601 over using a mixer from
>MiniCircuits. It seems that you still need two transformer for the
>SD8601, and making them wideband might be a problem. Even the xfmers
>form Minicircuits have a limited bandwidth. There are several mixers
>from MC that cost about $5-10 that don't need the additional
>transformers and they can cover from DC to 500-1000 MHz and higher.
>Does anyone have any comments? Why not use one wideband component
>than several components if the cost is equivalent?

There's no short answer. Achieving a third-order input intercept of +30 dBm or higher can be done with diode DBMs, but you'll need considerable LO power to get it. Getting that power isn't just component cost; it's also means more heat and more power consumed.

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

212. Re: Ramsey 146

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-19 21:46:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <19JUL199322462598@siva.bris.ac.uk>
Source record: 119926

In article <17903@news.duke.edu>, jbs@ee.ee.duke.edu (Joe B. Simpson) writes...
>In article <19JUL199319263904@siva.bris.ac.uk> ard@siva.bris.ac.uk (PDP11 Hacker .....)
writes:
>>There appears to be some confusion (possibly started by me) as to what the
>>Ramsey 146 postings were refering to. The kit that I built last weekend, and
>>that I was satisfied with was the FR-146 which is a 2m receiver. It appears
>>that others are refering to the FX-146 transceiver, which is not easily
>>available in the uk (the FR-146 is available from Maplin). I have not built the
>>FX-146, but may do in the future.
>
>I built the FR-146 this weekend - except for the NE602 IC (mixer/detector/
>oscillator), which was absent from the package. My first kit - took about
>5 hours (not bad for a newbie, I suppose). I was really impressed with the

Took me a lot less, but then I've been soldering for a long time. It was my
first VHF radio kit.

>quality of the insructions, the PC board, and all the parts but one being
>there (I'd prefer that they had left out, say, a 10K resistor instead ;-)
>and being at least close enough to the right values.

Yes, I thought the quality was good. Pitty about your NE602 :-(

>
>From the text in the manual it doesn't look as if any special equipment
>is required - just a signal source and some inductor-tuning tools.
>Let me know how yours works - I'll post my results when the chip shows up.

Works fine. Picked up the local repeater the same day as I built it. I couldn't
find anyone to transmit a test signal, but I do have a 1GHz sampling 'scope, so
I checked the 1st osc with that.

>
>>Somebody else mentioned incorrect component values. Yes, I had some of those -
>>all my 10uF capacitors were 4.7uF (it would probably have worked, but I got the
>>right ones anyway), and a 22pF capacitor was marked 2.2pF, and measured <10pF
>>on my tester. That was more serious, as the 2nd oscillator would not run with
>>2.2pF, so you'd get no signals. A 22pF worked fine though.
>
>I had the correct 22pF cap, but as in your case, what should have been 10uF
>caps were 4.7 in my kit. When I called to talk about the missing IC I asked
>them about the caps and they said the 4.7uF caps work just fine.

I thought that 4.7uF would work, but as I had to go back to Maplin to get the
22pF, I bought some 10uF electrolytics at the same time. Didn't cost much.

>
> -joe
>--
> You spend the night
> Like you were spending a dime
> - Lyle Lovett

-tony

213. PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 07:11:59 UTC
From: beyer@athena.uto.dec.com
Message-ID: <1993Jul20.071159.21143@nntpd.lkg.dec.com>
Source record: 119928

Are any people from the PUFF program (Caltech) watching this space? I want to send some inputs, so I'am looking for an e-mail address...

/Peter -PA3AEF-
--

Peter Beyer
Windows, Graphics & Multimedia
Digital Equipment b.v.
beyer@athena.uto.dec.com

214. Call for papers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 14:11:47 UTC
From: sford@arrl.org
Message-ID: <1761@arrl.org>
Source record: 119930

The ARRL Technical Department issues a call for articles for Volume 4 of the popular Antenna Compendium series.

Manuscripts should describe practical, readily reproducible antenna projects of general interest, or should describe computer modeling of antennas, transmission lines, matching networks or propagation. Mathematic or computer modeling (validated by actual measurements of practical antennas) is encouraged. Please send a detailed description or outline before writing final article to Dean Straw, N6BV, Senior Assistant Technical Editor at ARRL HQ. The deadline for submission is Dec.1, 1993. An Author's Guide is available.

NOTE: Dean does not have Internet access at this time. If you wish to send comments or questions, address your email to sford@arrl.org and I will relay.

215. Re: Mitsubishi M57729H

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 17:33:10 UTC
From: glenne@sr.hp.com
Message-ID: <CAH4rB.3E9@srgenprp.sr.hp.com>
Source record: 119931

Pertti Karppinen (pjka@jyu.fi) wrote:
: Friend of mine is about to build some FM amplifiers for 70cm and he
: needs info about the following hybrid: Mitsubishi M57729H.
: So if you have the data sheets handy, please mail me ... any
: information is helpful ... please mail me ;-D (guess if I'm going to
: ask one for myself ??? :-D)

M57729 is rated at 25W but shows almost 40W with .3W drive at 450 MHz
and 12.5 VDC. The plots also show more than 60W with Vcc=16 VDC and .3
W drive. It's rated to handle VSWR of 20:1 to Vcc=15.2V and Pout=30W.
This module is nonlinear therefore it is not approriate for SSB.

It's 52mm X 22mm and about 10mm thick (not counting pins). It bolts
directly to a flat heat sink.
Internally it is three stages with the first one biased and the second
and third running class C.

73

Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

216. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 17:49:02 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul20.174902.26878@ke4zv.uucp>
Source record: 119934

In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
>
>Why does everyone use the National part number when
>Motorola was the original source?

Because Motorola parts are hard to come by in onesy twosy quanities.
And because National has been more liberal with their data books.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

217. Ramsey PA-1 2m Power Amplifier Kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 18:13:35 UTC
From: craigb@sdd.hp.com
Message-ID: <22hckfINNa8n@hpsdl136.sdd.hp.com>
Source record: 119932

Has anyone built the Ramsey PA-1 2m Power Amplifier?

What do I need besides the kit, a soldering iron, solder, a power supply
and a box?

I see that Ramsey has a tendency to ship incorrect components in their
kits, so I'd watch for that. Are there any other pitfalls with this kit?

The local candy store sells the kit for $34.95.

Thanks for any help...
--
Craig Bosworth, KD6WQH
Hewlett-Packard, San Diego Division
craigb@sdd.hp.com 619 592-8609

218. Building a mast-mounted rf-sensing switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 20:10:23 UTC
From: billd@piton.Corp.Sun.COM
Message-ID: <22hjff$en1@jethro.Corp.Sun.COM>
Source record: 119933
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

I've got a discone antenna mounted on my roof that I primarily use with my scanner. It's connected to my shack via a 50-foot run of RG-58U cable, which I understand is very sub-optimal for UHF work and beyond. At this point, replacing the cable is not an option for me, but connecting a broadband RF preamp at the antenna is. I'm considering using one of mini-circuits modules which are rated something like .1MHZ to 1 or 2GHZ and have noise figures as low as 3 dB. Another option might be to use a TV preamp of the type Radio Shack sells, possibly modifying it to give something closer to 50 ohms of impedance.

Now here's the part I'm unsure about. I'd like to be able to connect my HT and power amp (35 watts on 2M) up to the antenna and use it. One thought that came to mind was to run DC up the coax and have it energize a relay which can switch the amp in and out of the circuit (and power it too) which would be under manual (switch) control. But an even better one would be to install some sort of rf-sensing switch on the pre-amp so that when I energized the transmitter it would automatically switch the pre-amp out of the circuit.

Most T/R switches I have seen so far work off the PTT switch and thus would require me to use an external microphone with the HT. Many also seem limited in the amount of RF power they can handle. Few seem capable of handling more than 5-10 watts. Is it realistic to expect that an rf-sensing switch would be able to take the pre-amp out of the circuit fast enough to prevent it from being damaged by the 35 watts output power of my power amp? Where might I find plans for such a switch if it exists?

--
Bill Dorsey
N3LMF

219. Re: Ramsey PA-1 2m Power Amplifier Kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-20 23:31:35 UTC
From: frankb@sad.hp.com
Message-ID: <CAHLCo.DAL@srgenprp.sr.hp.com>
Source record: 119936

Craig Bosworth (craigb@sdd.hp.com) wrote:
& Has anyone built the Ramsey PA-1 2m Power Amplifier?

Yes.

& What do I need besides the kit, a soldering iron, solder, a power supply
& and a box?

You have to tune it, so you need some sort of power meter or power meter
and attenuator that can handle 35 watts.

You have to heat sink the power transistor, so you need at least a hand
drill.

& I see that Ramsey has a tendency to ship incorrect components in their
& kits, so I'd watch for that. Are there any other pitfalls with this kit?

They shipped the correct parts (that is they matched the material list).
One of the trimmer caps (The one on the input) was too small-it
was maxed out and I needed more range-so I stuck a 10pF mica cap in
parallel with it.

It also had trouble oscillating-I cured that with a 20 ohm resistor to
ground *right next to* the base of the power transistor. This had no
measurable effect on gain or power output. The input impedence of the
power transistor at 150 MHz is much much less than 50 ohms, proabably
only a couple of ohms, so the 20 ohms has no effect in the 2m band,
but it really killed the oscillation problem. I was using a network
analyzer so it was easy to see. I'm not sure how you would tell if
it was oscillating without one. Any suggestions out there?

There circuit for the TR relay didn't work very well. I hacked around
and got it working, but I don't remember the details.

& The local candy store sells the kit for $34.95.

Sounds about right.

The assembled (by Ramsey) version of this amp doesn't have much of
a heat sink. I expect it would get pretty warm. I used a 4" x 4" x 1"
heatsink with the 1" height being rows of fins. I can keep it keyed
down all day with no fan and it only gets lukewarm.

--
Frank Ball 1UR-M frankb@sad.hp.com (707) 794-4168 work,
Hewlett Packard (707) 794-3844 fax, (707) 538-3693 home
1212 Valley House Drive IT175, XT350, Seca 750, '62 F-100, PL510
Rohnert Park CA 94928-4999 KC6WUG, LAW, AMA, Dod #7566, I'm the NRA.

220. NE602; was: Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 02:25:08 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CAHtDw.6ny@athena.cs.uga.edu>
Source record: 119937

N5QAW DE N4TMI:

I'm told the intercept points are better on the NE602A than on the
NE602.

I've found the NE602 very easy to work with. I haven't subjected it
to any rigorous performance tests.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

221. Re: Ramsey PA-1 2m Power Amplifier Kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 04:08:57 UTC
From: zlau@arrl.org
Message-ID: <1768@arrl.org>
Source record: 119943

In rec.radio.amateur.homebrew, frankb@sad.hp.com (Frank Ball) writes:
>
>It also had trouble oscillating-I cured that with a 20 ohm resistor to
>ground *right next to* the base of the power transistor. This had no
>measurable effect on gain or power output. The input impedence of the
>power transistor at 150 MHz is much much less than 50 ohms, proabably
>only a couple of ohms, so the 20 ohms has no effect in the 2m band,
>but it really killed the oscillation problem. I was using a network
>analyzer so it was easy to see. I'm not sure how you would tell if
>it was oscillating without one. Any suggestions out there?

A bad sign is to have your SWR/Power meter indicate RF power
with no input drive applied. This is how the SSB/CW types often
detect problems (I'm not talking but my meter reads power). Of
course, FM is constant amplitude, so you have to figure out
how to put the amplifier in transmit when the exciter isn't
transmitting.

Another sign of unwanted oscillations is an unusually high
SWR that only occurs with the amplifier in line.

>
>There circuit for the TR relay didn't work very well. I hacked around
>and got it working, but I don't remember the details.

In my opinion, the better way of doing TR switching is to modify
your radio to put a nominal 5 volts (few k ohm source resistance)
on the RF output connector during transmit. You detect this
voltage and use it to switch the amp. I think the matching
amp for the Icom IC-2AT does this. Sometimes, you can find a properly
sequenced signal that will allow the relay to settle down before
you actually transmit.

You don't want to hot switch the relay (have the contacts moving
with RF applied). This often shortens the life of the relay. It
can also result in a nasty signal that is much wider in bandwidth
than necessary. It may also shorten the life of the amplifier,
as many amplifiers don't work well without a proper load. This is
assuming a typical 2 meter amplifier. If your relay is switching
10 mW at 10 GHz, hot switching doesn't seem to be a problem :-).

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW

225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

222. Re: how do electrolytic caps fail?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 10:55:28 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul21.105528.29995@ke4zv.uucp>
Source record: 119940

In article <6334@catnip.berkeley.ca.us> kc6sss@catnip.berkeley.ca.us (Andy) writes:
>How do electrolytic caps fail? I have a scanner that I'm looking at
>where the input voltage to a 7805 regulator is about 2.2 volts. Clearly
>this isn't enough.
>
>Do electrolytic caps fail by shorting perhaps? I'm trying to figure out
>what's turning 12V into 2.2V.

Yes, electrolytics can fail by shorting, usually with spewing and a bad
smell. They can also partially fail by developing a large leakage current.
Other times they just dry out and lose their capacitance without shorting
or developing excessive leakage.

Let the equipment run for a while and feel of the capacitor with your
finger tip. It shouldn't be hot. If it is, that's your problem. You
can also take it out of circuit and test it with a meter, but the finger
test should be reliable if the power supply is nominally capable of an
amp or so.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

223. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 10:59:52 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul21.105952.89@ke4zv.uucp>
Source record: 119941

In article <CAEx5y.IuK@freenet.carleton.ca> ae517@Freenet.carleton.ca (Russ Renaud) writes:
>
>You need *minimal* equipment to tune up the FX146. I used my HF receiver
>to make sure the xtal oscillator was working, and a Radio Shack HF VSWR
>meter to peak up the output. You *can* use off the air signals to ensure
>the receive side is working OK. A multi-meter would be an asset, as well,
>for checking your work for cold solder joints, verifying resistor values,
>etc.

I would *strongly* recomend access to a spectrum analyser when tuning up the FX-146. It's very easy to get 6+ watts output, but very little of it on the desired frequency. With mine, I found that when tuned for minimum spurs it only made 2.5 watts out. When tuned for maximum output, most of the power was not on the desired channel.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

224. Re: Ramsey 146

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 11:48:09 UTC
From: dbraun@ilx049.intel.com
Message-ID: <22jadp$1fit@ilx018.intel.com>
Source record: 119942

Another data point on Ramsey kits:

A while ago I biuld their active antenna kit (for SWL).
The circuit is really crude, and you get massive intermod from
AM broadcast stations when you use it. I threw 10 feet of wire out
the window, and was much happier.

--
Doug Braun

Email: dbraun@iil.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC1-41
Matam Scientific Center
Haifa, Israel 31015

"There is no human problem which could not be solved if
people would simply do as I advise." -- Gore Vidal

225. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 12:11:44 UTC
From: lehane@sni.co.uk
Message-ID: <1993Jul21.121144.10764@sni.co.uk>
Source record: 119939

Lehane Kellet (lehane@sni.co.uk) wrote:
: : :
: : : Ok here goes MC1496. Happy?

: Hmmm, well the Icom 202 (old 2m SSB much respected rig!) uses it as well.
: I still have mine and it works FB.

Extract foot from mouth! As Zack has pointed out I got screwed up and
the IC202 uses the TI 76514 part. I think they are now discontinued/ rare
as rocking horse sh*t!

Apologies to anyone trying to find a 1496 in their Icom...

Lehane

--
Lehane Kellett. G8KMH. Siemens Nixdorf Information Systems, Bracknell.
lehane@sni.co.uk
Standard disclaimers apply. Warranty void if opened.

226. Re: PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 12:16:48 UTC
From: lehane@sni.co.uk
Message-ID: <1993Jul21.121648.10827@sni.co.uk>
Source record: 119938

Peter Beyer (beyer@athena.uto.dec.com) wrote:

: Are any people from the PUFF program (Caltech) watching this space? I want to
: send some inputs, so I'am looking for an e-mail address...

I guess there are probably enough people around using it to post
the comments here as well. I'd certainly be interested...
Which version are you on? 2.0 seems fb.
73's
Lehane

--
Lehane Kellett. G8KMH. Siemens Nixdorf Information Systems, Bracknell.
lehane@sni.co.uk
Standard disclaimers apply. Warranty void if opened.

227. Re: PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 14:54:04 UTC
From: beyer@athena.uto.dec.com
Message-ID: <1993Jul21.145404.5882@nntpd.lkg.dec.com>
Source record: 119944

In article <1993Jul21.121648.10827@sni.co.uk>, lehane@sni.co.uk (Lehane Kellet) writes:
|>
|>I guess there are probably enough people around using it to post
|>the comments here as well. I'd certainly be interested...
|>Which version are you on? 2.0 seems fb.
|>73's
|>Lehane

Yep, running 2.0. I wonder when a new version comes out.

Ok, here it comes:

Question: Have anyone tried using inductive sourcefeedback on GaAsFet
simulations? My results don't make sense...

Suggestions:
1. Include stability calculations. It's a very important aspect
of amplifier designs, and all the data is there, but not displayed.
I had to write my own program to analyse .puf files for stability.

2. Include noise analyses. So Noise Figure prediction can be done
on low noise amplifier designs.

3. Make Artwork output available in postscript.

/Peter -PA3AEF-
--

Peter Beyer
Windows, Graphics & Multimedia
Digital Equipment b.v.
beyer@athena.uto.dec.com

228. Re: NE602; was: Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 15:02:58 UTC
From: dnewkirk@arrl.org
Message-ID: <1770@arrl.org>
Source record: 119945

In rec.radio.amateur.homebrew, mcovingt@aisun3.ai.uga.edu
(Michael Covington) writes:

>N5QAW DE N4TMI:
>
>I'm told the intercept points are better on the NE602A than on the
>NE602.

Maybe; 602A specs -13 dBm (typical) TOIP with -45 dBm tones
spaced 60 kHz near 45 MHz; 602 (typical) is -15 dBm. Even
(somewhat) better is the mixer part of the NE605 mixer/IF chip
(-10 dBm, same test conditions).

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

229. Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 15:07:17 UTC
From: kc6sss@catnip.berkeley.ca.us
Message-ID: <6336@catnip.berkeley.ca.us>
Source record: 119947

dana@lando.la.locus.com (Dana H. Myers) writes:

>I know I sound like a spoil-sport, but Ramsey kits in general make me
>suspicious that even the properly built kits reliably meet the -60dBc/
>25 uW max limit for spurious output on a 2m rig....

For example, their FM-10 kit uses an LC circuit to make the 38kHz source for the stereo pilot. Even their instructions say that "the proper setting is only within five percent of the range of the variable capacitor" [paraphrased]. The skinny on the net about this is that you simply toss this section of the circuit and wire it up with a small cap and a 38kHz crystal just like it shows in the application note for the chip.

Has anyone else noticed that they've stopped advertising their 6m FM xcvr?

230. Re: Ramsey PA-1 2m Power Amplifier Kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 15:35:48 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jul21.153548.146028@locus.com>
Source record: 119948

In article <22hckfINNa8n@hpsdl136.sdd.hp.com> craigb@sdd.hp.com (Craig Bosworth) writes:
>Has anyone built the Ramsey PA-1 2m Power Amplifier?
>
>What do I need besides the kit, a soldering iron, solder, a power supply
>and a box?

A spectrum analyzer that displays up to 1 GHz. H-P makes some very
nice spectrum analyzers ;-).

>I see that Ramsey has a tendency to ship incorrect components in their
>kits, so I'd watch for that. Are there any other pitfalls with this kit?

You need to make certain your amplifier meets the technical standards
in Part 97.307(e), i.e. no spurious emission greater than 25 uW. Don't
trust Ramsey to sell a kit which complies relevant technical standards.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

231. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 15:41:14 UTC
From: dnewkirk@arrl.org
Message-ID: <1771@arrl.org>
Source record: 119946

In rec.radio.amateur.homebrew, lehane@sni.co.uk (Lehane Kellet) writes:

[deletions]

>Extract foot from mouth! As Zack has pointed out I got screwed up and
>the IC202 uses the TI 76514 part. I think they are now discontinued/ rare
>as rocking horse sh*t!

[deletions]

But I think this basic part is still used in current Japanese
production as *16514*; different temp spec, or what?

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

232. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 18:12:09 UTC
From: markz@ssc.com
Message-ID: <1993Jul21.181209.18251@ssc.com>
Source record: 119953

Gary Coffman (gary@ke4zv.uucp) wrote:
: In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
: >Why does everyone use the National part number when
: >Motorola was the original source?
:
: Because Motorola parts are hard to come by in onesy twosy quanities.
: And because National has been more liberal with their data books.

Boy, is there a lot of regional variation. Around here, there
was no problem with Motorola, either parts or databooks, but
you had to give the National rep a real line or pay cash for databooks.
And finding which distibutor carried them that month was another
game. (Of course after a consolidation or two amongst the local
distributors, everything is a pain in the ass to get for the
basement hacker, now.)

Mark Zenier markz@ssc.wa.com markz@ssc.com

233. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 19:43:30 UTC
From: georgen@stortek.com
Message-ID: <1993Jul21.194330.27118@stortek.com>
Source record: 119952

In article <1993Jul19.034759.6378@ssc.com> markz@ssc.com (Mark Zenier) writes:
>Andrew P. Herdman (apollo@io.org) wrote:
>: In article <1993Jul15.173500.12354@ssc.com> markz@ssc.com (Mark Zenier) writes:
>: >
>: >Ed Burress (edbu@pogo.wv.tek.com) wrote:
>: >: I was thinking of using a LM1496 in a balanced modulator circuit,
>: >
>: >Why does everyone use the National part number when
>: >Motorola was the original source?
>:
>: Ok here goes MC1496. Happy?
>:
>: (But why can't we get any of the example circuits in the Motorola Data book to
>: work hmmmm)
>
>'cause it's really a pretty miserable part. Twiddle this pot, hold your
>tounge just right, and if the temperature doesn't change ....
>
Hell, what do you want for a part that was designed over 25 years ago! :-)

FYI - there exists several bulletins and info from Motorola Data books,
they may be presently out of print,(?) but can be found in old Motorola
Data books. If someone is interested (on a limited basis) I could
copy data that I have and forward it. (Yes I have a 1977 Motorola
Linear Manual with the MC1496 in it....)

73 George Noyes email: georgen@redwood.stortek.com

234. Ramsey and J*Com

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 19:48:00 UTC
From: rich@mulvey.com
Message-ID: <930721.154800.3F5.rusnews.w165w@mulvey.com>
Source record: 119949

Are Ramsey and J*Com the same company? I was looking at the latest issue of QST and saw a J*Com ad with an address on Canning Parkway in Victor, NY. And I know that Ramsey is on the same road...

- Rich
--
Rich Mulvey Amateur Radio: N2VDS 787 Elmwood Terrace
rich@mulvey.com Rochester, NY 14620

235. PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 20:39:47 UTC
From: k2ph@cbnewsj.cb.att.com
Message-ID: <CAJ82D.Crs@cbnewsj.cb.att.com>
Source record: 119951

Okay, I'll bite. What is PUFF?

73,
Bob K2PH

--

Bob Schreibmaier K2PH | UUCP: ...!att!mtdcr!bob
AT&T Bell Laboratories | Internet: bob@mtdcr.att.com
Middletown, N.J. 07748 | ICBM: 40o21'N, 74o8'W

236. Re: how do electrolytic caps fail?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 20:47:09 UTC
From: nbb@widget.demon.co.uk
Message-ID: <743289993snz@widget.demon.co.uk>
Source record: 119868

How do electrolytic capacitors fail?

Answer....

```
BBBBBBBBBB AAAAAA NNNN NNN GGGGGGGG
BBBB B AAA AAA NNN N NNN GGGGGGGGG
BBBB B AAA AAA NNN N NNN GGG
BBBB B AAA AAA NNN N NNN GGG GGGGGGGG
BBBB BBBBB AAA AAA NNN N NNN GGG GGGGGGGG
BBBB B AAAAAAAAAAAAAAA NNN N NNN GGG GGG
BBBB B AAA AAA NNN N NNN GGG GGG
BBBB B AAA AAA NNN N NNN GGGGGGGGGGG
BBBBBBBBBB AAA AAA NNN NNNN GGGGGGGG
```

Sorry I couldn't resist it....
Nick.

```
--
|
|
\|/
Completely Novel, Witty and Profound .sig in construction.
```

237. Re: FT411e VOX... HELP!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-21 21:36:28 UTC
From: maessm@rs6314.ecs.rpi.edu
Message-ID: <22kcss$d3v@usenet.rpi.edu>
Source record: 119950

In article <CAC1Dt.24p@news.cso.uiuc.edu>, ahall@ux4.cso.uiuc.edu (Allen John Hall) writes:

|> I was wondering if anyone out there has played around w/ the Yaesu
|> FT411e internal VOX. I am looking for a way to "create" my own vox
|> headset for use w/ my bycicle helmet (useful for long rides), and
|> was very curious as to the extent of the vox circuitry in my 411e.
|> The manual explicitly says to purchase the "YH-2" (i think) headset
|> which I was sort of "eyeing" because I am in need of a very light-
|> weight headset (I've got an easily made idea in my head) and was
|> speculative on how well the yh-2 headset would fit between my head
|> and my helmet. If you have any ideas, I would very much like to hear
|> them, and look forward to them w/ enthusiasm! THANKS AHEAD OF TIME!!!

The VOX on Yaesu HT's (at least the current production Yaesu HT's) is internal to the radio. This means that you can use whatever mike you want with them. I did some experiments not too long ago with an old Sony electret mike element connected directly to the mike jack (make sure the resistance of the mike element doesn't key the radio). It worked just fine to trigger the VOX on the radio. The only problem was that, since there is no antivox circuitry built into the radio, if you put the mike too close to the speaker, the VOX triggers. Also, the sensitivity is set very low. I have not found out a way of changing this.

Good luck with your fiddling.
--
Mat Maessen N2NJZ | maessm@rpi.edu
------------------------------ +----------------------------------
disclaimer: Anyone NOT singing will have a can of Foster's lobbed at
their heads.

(c) 1993 Fake-sig Co., Inc.
----

238. Re: PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 08:25:23 UTC
From: beyer@athena.uto.dec.com
Message-ID: <1993Jul22.082523.21527@nntpd.lkg.dec.com>
Source record: 119954

Some info from V1.0. (V2.0 supports VGA and HPGL as well and many more features:

"PUFF is a program for laying out and analyzing microstrip and
stripline circuits on an IBM-compatible personal computer. PUFF is
fast and easy to use. One can analyze circuits with lumped
elements, transmission lines, coupled-lines, and arbitrary
multi-ports. The user lays out the circuit on the screen with
cursor keys, and can analyze the circuit in the frequency or time
domain at any time. The program also makes the photographic artwork
for etching the circuit on a dot-matrix printer. PUFF takes full
advantage of the color and excellent resolution of the Enhanced
Graphics Adapter, and it also works with the Color Graphics Adapter.

Puff 1.0 was free. The grant that supported this ran out. Puff 1.5 costs
$10 a copy. Version 1.5 (by Richard Compton, Scott Wedge, and David
Rutledge) is similar to 1.0 but with bugs removed, and improved. They say
it runs nearly twice as fast. It does not require a math coprocessor any
more.

Source code is also available. (Presumably for Turbo Pascal version 5+.)

Puff version 1.5: $10. 5" or 3.5" floppy (you must specify).
Manual only: $5.
Source code: $10. Comes on 3.5" floppy.
Checks payable to Caltech.

Puff Distribution
Ms. Dale Yee
MS 116-81, Department of Electrical Engineering
California Institute of Technology
Pasadena, CA 91125

FAX: 818-356-2137.

/Peter -PA3AEF-
--

Peter Beyer
Windows, Graphics & Multimedia
Digital Equipment b.v.
beyer@athena.uto.dec.com

239. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 08:44:09 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jul22.084409.175013@locus.com>
Source record: 119955

In article <6336@catnip.berkeley.ca.us> kc6sss@catnip.berkeley.ca.us (Andy) writes:
>dana@lando.la.locus.com (Dana H. Myers) writes:
>
>>I know I sound like a spoil-sport, but Ramsey kits in general make me
>>suspicious that even the properly built kits reliably meet the -60dBc/
>>25 uW max limit for spurious output on a 2m rig....
>
>For example, their FM-10 kit uses an LC circuit to make the 38kHz
>source for the stereo pilot. Even their instructions say that "the
>proper setting is only within five percent of the range of the
>variable capacitor" [paraphrased]. The skinny on the net about this is
>that you simply toss this section of the circuit and wire it up with
>a small cap and a 38kHz crystal just like it shows in the application
>note for the chip.

Well, Andy, you've inspired me to say what I really intended in my
"spoil-sport" comment:

In my opinion, Ramsey kits are generally junk. They may be of
use if you are willing and able to re-engineer them.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

240. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 13:55:00 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Jul22.135500.14416@mnemosyne.cs.du.edu>
Source record: 119956

gary@ke4zv.uucp (Gary Coffman) writes:

>I would *strongly* recomend access to a spectrum analyser when tuning
>up the FX-146.

I'm building an FX-440 now, and I figured this would come up. I can get my hands on a spectrum analyzer (after hours at work), but how do not-so-lucky people go about getting one? What's a typical one-day rental charge?

Remember, a lot of individuals (and even clubs) aren't blessed with someone who can get any-time access to a spectrum analyzer... or are you just saying "if you can't get one, don't build this"? :-)

>It's very easy to get 6+ watts output, but very little
>of it on the desired frequency. With mine, I found that when tuned for
>minimum spurs it only made 2.5 watts out. When tuned for maximum output,
>most of the power was not on the desired channel.

There's a good rule of thumb for the spectrum analyzer-impaired, perhaps... don't crank the power up just because you can. Since I'm going to need a brick for what I want to do anyway, keeping the power down is no prob for me. BTW, did you see any spurs *below* the 2.5 watt output level? (Stupid question, most likely. :-)
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think
lkollar@nyx.cs.du.edu | every ham should have to learn it.

241. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 14:50:06 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <22m9eu$el2@news.acns.nwu.edu>
Source record: 119957

In article <1993Jul22.084409.175013@locus.com> dana@lando.la.locus.com (Dana H. Myers) writes:
>
>Well, Andy, you've inspired me to say what I really intended in my
>"spoil-sport" comment:
>
> In my opinion, Ramsey kits are generally junk. They may be of
> use if you are willing and able to re-engineer them.
>

Well, I could not agree more. After I built the FX146, I helped some one else debug a Ramsey QRP transmitter and receiver. Some thoughts:

Transmitter:
Very weak copy of W7ZOI's Universal QRP transmitter. The tuned LC coupling between stages had been replaced by cheaper and wider bandwidth RC coupling. Result: Plagued with parasitics. Had to put beads, change components and coupling to make it work cleanly.
Receiver:
Another cheapo knock-off of QST's Neophyte Receiver. The expensive air variable had been replaced by a reverse biased 1N4002. Not even a proper varactor. How low will their designs sink? Drifted like a hobo and was more temperature sensitive than a Kodiak in New Orleans zoo.

> * Dana H. Myers KK6JQ | Views expressed here are *
> * (310) 337-5136 | mine and do not necessarily *
> * dana@locus.com DoD #466 | reflect those of my employer *

> * This Extra supports the abolition of the 13 and 20 WPM tests *

Not this one.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.

242. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 17:12:26 UTC
From: jwl@ferrari.cray.com
Message-ID: <1993Jul22.121226.5758@walter.cray.com>
Source record: 119958

Hm.

Can I safely say that in order to assure that you can successfully build
a Ramsey kit that you need to know enough to have designed the thing yourself?

In that case, why not do just that? 8^)

Jim.
--

Jim Lynch, Sales Analyst, Cray Research, Inc. / ARS: K4GVO
Southeast District, Phone: (404) 631-2254, Email: jwl@sedist.cray.com
Suite 270, 200 Westpark Drive, Peachtree City, GA 30269

243. Call For Papers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 17:52:27 UTC
From: sford@arrl.org
Message-ID: <1791@arrl.org>
Source record: 119959
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sci.electronics,comp.misc,comp.dsp

>>>>>>>>>>> A Call for Articles <<<<<<<<<<<<

Summertime is the time when we usually experience a slump
in incoming articles. Naturally, practically everyone has found
something to do outdoors (be it recreational or not), so bench
work and writing drop a notch or two on the priority ladder.
This year is no different from the earlier ones.
We're in need of some good material for upcoming issues of
QST. Have you got anything on the workbench, in the computer or
coming together in your head that you can send our way? We'd be
happy to see it! We're especially interested in simple and
engaging projects that are relatively inexpensive ($200 or less).
If you'd like a copy of our Authors' Guide, please call, fax,
write, or e-mail the Technical Department Secretary (voice:
203-666-1541, ext 278; fax (24 hours) 203-665-7531; e-mail
bdicosim@arrl.org. Our address is:

Technical Department Secretary
American Radio Relay League
225 Main Street
Newington, CT 06111

Some folks don't know it, but we *do* pay for articles. You
may not get rich writing for us (although some of our authors
have done *quite* well selling kits and assembled and tested units),
but the extra money does come in handy!

Thanks for your consideration.

Sincerely,

Paul Pagel/N1FB

NOTE: This announcment was posted on Paul's behalf. If you have
questions or comments, send them to sford@arrl.org and I will relay.

244. Any one tried Tandem Match pwr/swr meter?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 19:13:17 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <22mosd$jj3@news.acns.nwu.edu>
Source record: 119960

Have you tried the Tandem Match power/swr meter in QST and
ARRL handbook? The July '93 QST has a page on it in the technical
correspondence (or was it Feedback?) section.

For those of you who have not seen the article, this meter is
accurate within 5% of a Bird from 10mw to 150W, 80m thru 2m.
It has a linear display of forward power (measured forward less
reflected) and analog computed SWR (that does not change with power level).
The instrument provides a voltage output that is linear in SWR:
1v=1:1swr, 1.5v=1:1.5 swr and so on.

I am going to build one. Initially, I plan to use a LM3914 driven bar
graph LED display for quick response. I expect it to be faster
than an analog meter display and more readable than a fast
changing numeric display.

The other idea that I have been toying with is to interface it to
a digitally controlled sweep oscillator (one of the Qualcomm chips
would be great) and to a ADC. Then a micro controller can be
used to draw the SWR graph on a small panel graphics lcd display.
The catch? I do not diddly about micro controllers. Want to help?

If you have built one or are planning to build one, I would like
to hear from you.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.

245. PROJECT 2: 20 METER QRP CW XMTR

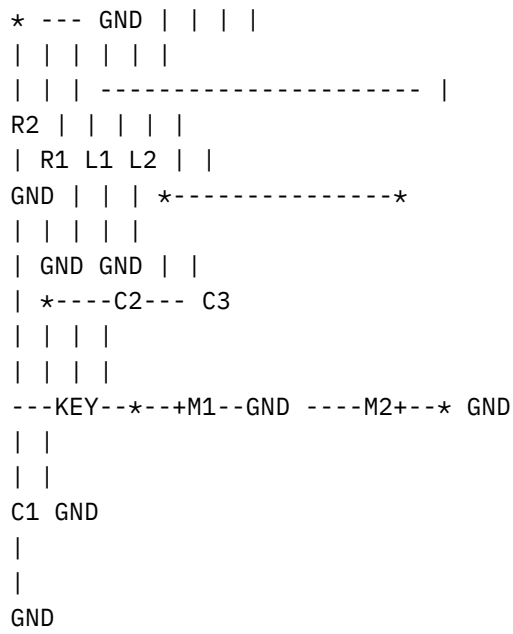
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 22:26:20 UTC
From: jherman@Hawaii.Edu
Message-ID: <CAL7nx.8x0@news.Hawaii.Edu>
Source record: 119961

Here's the second QRP project taken from 101 EASY HAM RADIO PROJECTS,
by Robert Brown and Tom Kneitel; again, since the book is out of print,
I assume there will be no copyright problems...
This project is a simple 20 meter CW xmtr with output about 100 mw (?).
Here are the authors' comments:
"If you have always wanted to try low-power on 20 meters, here is an
excellent method for joining the growing ranks of flea-power addicts -
and doing it inexpensively. This circuit is capable of world-wide QSO's,
given the right conditions and assuming QRM is not present.
"The transmitter uses a pair of GE-1 universal replacement transistors
in a unique circuit configuration a great more sophisticated than you
would normally expect for an under-one-watt rig. Crystal can be a
fundamental 14-mHz type.
"L1 should be adjusted for sure-fire oscillation every time the
key is depressed. C4 is simply adjusted for maximum output on the FSM."

PARTS LIST:

C!, C2 .02 uF capacitors
C3, C5 .002 uF capacitors
C4 51 pF variable capacitor
L1 38 turns of No. 22 enameled wire on a 1/2 in. diameter
slug-tuned form
L2 8 turns of No. 22 enameled wire wound over cold end of L1
L3 Coil, 17 turns of Air Dux 616T (or equiv.) tapped 5 1/2
turns from cold end
L4, L5 2.5 mH rf choke (National R-100 or equiv.)
M1 1.5 volt dry cell
M2 6 volt battery
M3 14 mHz crystal
Q1, Q2 GE-1 transistors
R1 180 ohm resistor
R2 1.1 megohm resistor

As before, rather than trying to `draw' the symbol for each component,
I've just inserted the part number. Oh, note the polarities of the
batteries M1 and M2. GND = ground, ANT = antenna, E = emittor, ANT
C = collector, B = base, KEY = well, this is a CW rig.... |
*----
| |
--------*-------- ------------- ----*-----C5--------L3 |
| | | | | | | C4
L4 M3 E-Q1-C | GND-E-Q2-C | | |
| | | | | | GND GND
| | B | B L5



Note that the collector of Q1 `jumps' over the hot end of L2; this is
the only jump. * = a junction of 3 or more leads.

.... .- ...- . ..-. ..- -. !

Jeff, NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@Hawaii.Edu

246. Re: 1496 and SSB questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 23:37:16 UTC
From: kevin@TorreyPinesCA.ncr.com
Message-ID: <1993Jul22.233716.28752@TorreyPinesCA.ncr.com>
Source record: 119963

In article <1993Jul21.181209.18251@ssc.com> markz@ssc.com (Mark Zenier) writes:
>
>Boy, is there a lot of regional variation. Around here, there
>was no problem with Motorola, either parts or databooks, but
>you had to give the National rep a real line or pay cash for databooks.
>And finding which distibutor carried them that month was another
>game. (Of course after a consolidation or two amongst the local
>distributors, everything is a pain in the ass to get for the
>basement hacker, now.)
>
The Motorola outlet here is pretty free with their databooks, I picked up
half a dozen without having to give them any information at all, other than
I was interested in RF parts.

Actually acquiring the parts is another story- the best way is if you
know someone in the E-biz who can get samples for you. Samples seem to be
the only way to acquire parts in very small, i.e., 1-5, amounts.

--
[] [] [][] [][] Kevin Sanders, KN6FQ NCR Torrey Pines
[] [] [] [] [] kevin.sanders@torreypinesca.ncr.com (619) 597-3602
[][] [][] [][] kevin%beacons@cyber.net
[] [] [] [] []
[] [] [] [] [][] Dump MS-DOS. Prevent Programmer Burnout with Linux.

247. Re: Ramsey PA-1 2m Power Amplifier Kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-22 23:45:20 UTC
From: frankb@sad.hp.com
Message-ID: <CALBBL.E5x@srgenprp.sr.hp.com>
Source record: 119962

Zack Lau (zlau@arrl.org) wrote:
&
& In my opinion, the better way of doing TR switching is to modify
& your radio to put a nominal 5 volts (few k ohm source resistance)
& on the RF output connector during transmit. You detect this
& voltage and use it to switch the amp. I think the matching
& amp for the Icom IC-2AT does this. Sometimes, you can find a properly
& sequenced signal that will allow the relay to settle down before
& you actually transmit.
&
& You don't want to hot switch the relay (have the contacts moving
& with RF applied). This often shortens the life of the relay. It

I don't want to try to open up my FT-470 to make that mod, but I
have been thinking about putting a "box" between the external mic and
the radio and controling the TR switch from there. Shouldn't be too hard.

--
Frank Ball 1UR-M frankb@sad.hp.com (707) 794-4168 work,
Hewlett Packard (707) 794-3844 fax, (707) 538-3693 home
1212 Valley House Drive IT175, XT350, Seca 750, '62 F-100, PL510
Rohnert Park CA 94928-4999 KC6WUG, LAW, AMA, Dod #7566, I'm the NRA.

248. Re: Ramsey and J*Com

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-23 12:56:26 UTC
From: rhealy@arrl.org
Message-ID: <1800@arrl.org>
Source record: 119964

In rec.radio.amateur.homebrew, rich@mulvey.com (Rich Mulvey) writes:
>
> Are Ramsey and J*Com the same company? I was looking at the latest
>issue of QST and saw a J*Com ad with an address on Canning Parkway in
>Victor, NY. And I know that Ramsey is on the same road...

They're not the same company, per se. Ramsey recently acquired
j-Com. Peter Jennings, j-Com's founder, will continue his product-
development (and other) work on j-Com products.
--73, Rus

Rus Healy, NJ2L rhealy@arrl.org
Senior Assistant Technical Editor, QST Tel 203-666-1541
ARRL, 225 Main St, Newington CT 06111-1494 Fax 203-665-7531
1.8 through 3456 MHz -- and climbing!

249. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-23 16:43:25 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul23.164325.13540@ke4zv.uucp>
Source record: 119966

In article <1993Jul22.135500.14416@mnemosyne.cs.du.edu> lkollar@nyx.cs.du.edu (Larry Kollar) writes:
>gary@ke4zv.uucp (Gary Coffman) writes:
>
>>I would *strongly* recomend access to a spectrum analyser when tuning
>>up the FX-146.
>
>I'm building an FX-440 now, and I figured this would come up. I can get my
>hands on a spectrum analyzer (after hours at work), but how do not-so-lucky
>people go about getting one? What's a typical one-day rental charge?
>
>Remember, a lot of individuals (and even clubs) aren't blessed with someone
>who can get any-time access to a spectrum analyzer... or are you just saying
>"if you can't get one, don't build this"? :-)

Perhaps your first kit should have been the Science Workshop spectrum analyzer. This is an *excellent* project BTW. Yes, I'd say that if you are interested in staying inside FCC limits, you shouldn't try to tune up a Ramsey without a spectrum analyzer. Note you don't need a state of the art $20,000 dollar instrument, just something that will let you see that those nasty old spurs are sticking up like grass. I've got an old Tek 491. That was a great instrument in it's day. And it's still great for most needs in the ham workshop. Cost $700 at the Atlanta hamfest in working order *with* the manual. Of course my Science Workshop analyzer has a *tracking* generator and a 12 inch Wavetek XY display courtesy of a Scientific Atlanta junk sale, and it cost a lot less. I've got access to an IFR-1200 on the bench at work, and an IFR-500 and a stack of Gen Rad unit oscillators on the bench at home. Remember, you can't have too much test equipment. :-) Even antique military surplus test equipment is better than no test equipment at all. I've got an old URM-25D that I picked up for $20 at a hamfest. I use it frequently.

You can hunt for spurs with a wide coverage receiver, but you can never be sure you've found all of them, or if tuning to get rid of one didn't cause 5 more to pop up elsewhere. There is a trick you can use if you can't get your hands on an analyzer though. You can feed the output of the transmitter being tuned into a dummy load, and tap off the line with a Tee to a very sharp cavity. Tune the cavity to notch out the carrier, and use a diode detector to look for *other* frequency output. If you find some, it's not clean. This isn't foolproof, nor will it catch the lowest level spurs, but it does work.

>>It's very easy to get 6+ watts output, but very little
>>of it on the desired frequency. With mine, I found that when tuned for

>>minimum spurs it only made 2.5 watts out. When tuned for maximum output,
>>most of the power was not on the desired channel.
>
>There's a good rule of thumb for the spectrum analyzer-impaired, perhaps...
>don't crank the power up just because you can. Since I'm going to need a
>brick for what I want to do anyway, keeping the power down is no prob for me.
>BTW, did you see any spurs *below* the 2.5 watt output level? (Stupid
>question, most likely. :-)

Unfortunately, low output doesn't guarrantee clean output. There were
at least two points where the Ramsey tuned up. One was clean, one was
not.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

250. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-23 16:46:07 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul23.164607.13624@ke4zv.uucp>
Source record: 119967

In article <1993Jul22.121226.5758@walter.cray.com> jwl@ferrari.cray.com (Jim Lynch) writes:
>Hm.
>
>Can I safely say that in order to assure that you can successfully build
>a Ramsey kit that you need to know enough to have designed the thing yourself?
>
>In that case, why not do just that? 8^)

Well, having the circuit board and *most* of the correct parts does make a project go quicker and easier. Yes, you need to re-engineer bits of the circuits, but that's still easier than starting from scratch. I think the price is excessive for the amount of effort you have to expend to get it to work correctly, but then what isn't today?

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

251. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-23 16:48:10 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-743446079@unomaha.edu>
Source record: 119965
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

252. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-23 21:56:14 UTC
From: dana@lando.la.locus.com
Message-ID: <1993Jul23.215614.104414@locus.com>
Source record: 119869

In article <1993Jul22.121226.5758@walter.cray.com> jwl@ferrari.cray.com (Jim Lynch) writes:
>Hm.
>
>Can I safely say that in order to assure that you can successfully build
>a Ramsey kit that you need to know enough to have designed the thing yourself?
>
>In that case, why not do just that? 8^)

Good point. I would say that the Ramsey kit may give you a boost in building a project yourself by collecting most of the correct parts and making a mostly OK PC board. However, the engineering quality of the actual design tends to be poor, so you may have add components, change values and cut traces. Also, you'll need to verify the performance of the finished item.

If you do not take the time to clearly understand how the Ramsey kit works and verify that it is correctly functioning, you may be very surprised later on ;-). This is why I do *not* suggest Ramsey transmitters to beginners; a beginner is liable to build it and believe it works, on faith. I'm likely to look at the circuit diagram and figure out what needs to be fixed.

I never once recall finding anything in a Heathkit to "fix"; they were engineered well and worked right. Another Heathkit tended to do, in my recollection, was not sell things as kits that couldn't reliably be built.

As it stands, I've recommended the Ramsey FM receiver kits to people that want a 10.7 Mhz IF strip ready-made. The Ramsey receivers are poor because they have little front-end filtering, a cheesy pre-amp, and an NE602 mixer that overloads if you look at it hard. They're poor receivers. But the IF strip is standard MC3357 fare, including a Murata ceramic filter. If you toss the front end and build your own, the Ramsey IF is acceptable.

--
* Dana H. Myers KK6JQ | Views expressed here are *
* (310) 337-5136 | mine and do not necessarily *
* dana@locus.com DoD #466 | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

253. What do YOU shop for?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-24 02:04:15 UTC
From: schuch@phx.mcd.mot.com
Message-ID: <1993Jul24.020415.25885@phx.mcd.mot.com>
Source record: 119872

I have some very good friends who have a couple of retail computer/surplus/salvage/scrap stores here in Arizona. They are opening their third retail outlet and want to expand their piece parts line to cater to the local university electronics crowd. They have asked me what a good basic starting assortment of components would be. They do not have the budget to go out and buy 25 each of every 74XXX part so they just want to hit the highlights, stock things that have a reasonable chance of moving.

Sooo.....

What would YOU want to see in a hobbiest electronics store? What do you find yourself regularly running out to get?

I, and they would appriciate and suggestions you may have. Seriously, when was the last time a retailer asked YOU what you would like to see on the shelves.

Thanks,
John

+--+
| John R. Schuch - Motorola Computer Group - Manufacturing Engineering |
| N7XVS - schuch@phx.mcd.mot.com - (602) 438-3008 - CompuServe: 70733.3330 |
+--+

254. Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-24 03:58:48 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CAnHq1.MHp@athena.cs.uga.edu>
Source record: 119871
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

Well, here on rec.radio.ramsey (:), let me toss in my own question:

I built an FM-10 this evening. It works fine except that the output is not stereophonic. The receivers recognize it as stereo, and turn on their "stereo" light, but there is little or no separation of the two channels. Also, the two inputs of the FM-10 are not equally sensitive, and I can't make them so by turning the balance control.

Does anyone recognize this problem?

Also, is pin 13 of the BA1404 supposed to be 19 kHz (as shown on the diagram) or 38 kHz (as asserted in the instructions)? 19 kHz is what I'm using; I can't tune it up to 38 kHz.

Finally, who makes the BA1404 and where can I get a proper data sheet?

Many thanks to anyone who can contribute any information. I'm about to perform what tests I can (basically, making sure the two input channels are free of defective components and are not accidentally connected to each other somehow), and that may well solve the problem.

In Ramsey's favor: They have _nice_ PC boards. This one arrived already heavily tinned and was easy to solder.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

255. any ftp sites carring homebrew projects??

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-24 04:08:22 UTC
From: srbechte@nyx.cs.du.edu
Message-ID: <1993Jul24.040822.21908@mnemosyne.cs.du.edu>
Source record: 119870

subject says it all ;)~

256. Wanted project for tuning cap array...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-24 09:35:02 UTC
From: cvgtn003@vmsb.is.csupomona.edu
Message-ID: <1993Jul24.013502.1@vmsb.is.csupomona.edu>
Source record: 119873

I recently came across a beauty of a variable capacitor array, and am
now looking to build a project around it.

The unit is made up of a rotary cap (plates spin between plates-type)
providing .00004 mfd to .001 mfd, a switch to add in an extra .01mfd, and a
rotary multi-position switch to switch in 0 to .01mfd in 10 increments.
(range from .00004 mfd to .021 mfd)

Just curious if anyone out there has any suggestions as to what I could
build around this beast and/or plans available...

Tnx!

Grimm

P.K.I. - Hydraulics - Cal Poly Rose Float, Pomona
Email: cvgtn003@vmsa.is.csupomona.edu

257. Re: Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-24 19:47:43 UTC
From: cormackj@access.digex.net
Message-ID: <22s3kv$1cd@access.digex.net>
Source record: 119874
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

I hear the tuning to get stereo is very critical. The light comes on for a very wide range of tuning but stereo works only when the freq is very close to 19 khz. I have the same problem with my FM-10. Sound quality is great but mono. I haven't tried the procedure. Read about in the alt.radio.pirate newsgrsoup. You should address your question there and you'll get more responses.

--

John Cormack ** Since this is not my employer's account **
Cormackj@access.digex.net ** No disclaimer is necessary **

258. Re: Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 05:26:03 UTC
From: roberts@triton.unm.edu
Message-ID: <22vptbINN4th@lynx.unm.edu>
Source record: 119875
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

In article <CAnHq1.MHp@athena.cs.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>
>I built an FM-10 this evening. It works fine except that the output is
>not stereophonic. The receivers recognize it as stereo, and turn on
>their "stereo" light, but there is little or no separation of the two
>channels. Also, the two inputs of the FM-10 are not equally sensitive,
>and I can't make them so by turning the balance control.

Yep, that is a major problem with the FM-10 (and a good complaint
of mine!) -- that is why I usually use it with one audio input instead
of the two L-R ones.

There was a better fix for that posted on alt.radio.pirate (or was that
on the FM-10 mailing list? I can't remember which source). I think
I yanked it so I could fix my own FM-10. Send me Email and I'll see
if I can find the posting for you if you are interested.

Robert
roberts@triton.unm.edu

259. How do TDR's work

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 11:25:26 UTC
From: moisan@bronze.lcs.mit.edu
Message-ID: <230ev6$b85@bronze.lcs.mit.edu>
Source record: 119877

Gary Coffman mentions a homemade TDR made of a pulser and oscilloscope with a calibrated timebase. How are the pulser, scope and cable under test connected? How do commercial units work? I'm intrigued (anything to get me away from the flamepit of rec.radio.amateur.policy...:))

73's, Dave, N1KGH

--
| David Moisan, N1KGH /^_/^\ moisan@silver.lcs.mit.edu |
| 86 Essex St. Apt #204 (o ^ o) n1kgh@amsat.org |
| Salem. MA 01970-5225 | | ce393@cleveland.freenet.edu |
| |

260. Science Workshop DIY spectrum analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 11:35:37 UTC
From: moisan@bronze.lcs.mit.edu
Message-ID: <230fi9$bav@bronze.lcs.mit.edu>
Source record: 119876

Gary, you mentioned the Science Workshop spectrum analyzer kit. I emailed
you on it but the msg went to La-La land. Some questions:

1) Is this the same company mentioned in Joe Carr's ham columns in
Popular Electronics? He did write a few columns on the subject,
and, I believe, mentioned the company.

2) I saw (or think I saw) their ad in Nuts and Volts. Intriguing, but
$24 seems a lot for plans, sight unseen. Has anyone ordered the plans?

3) Has anyone built one? Obviously, it's not Tek, and not $20,000 either--
how well does it work? How hard was it to build? What other instruments
(besides the scope) are needed?

I've been hunting for a junked varactor tuner to start this project,
and it'll probably be my first RF project. Am I on the right track?

Thanks and 73's, Dave, N1KGH

--
| David Moisan, N1KGH /^_/^\ moisan@silver.lcs.mit.edu |
| 86 Essex St. Apt #204 (o ^ o) n1kgh@amsat.org |
| Salem. MA 01970-5225 | | ce393@cleveland.freenet.edu |
| |

261. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 14:39:25 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Jul26.143925.19363@mnemosyne.cs.du.edu>
Source record: 119878

gary@ke4zv.uucp (Gary Coffman) and I go back and forth in a friendly fashion...
see, you don't have to flame to have a discussion on Usenet! :-)

>Perhaps your first kit should have been the Science Workshop spectrum
>analyzer. This is an *excellent* project BTW.

I'll have to check that out. Like I said though, I can get my hands on a SA
readily enough at work. It might be nice to have one at home though, to loan
out to friends if nothing else.

I got curious & grabbed a friend's copy of the FCC Rule Book over the week-
end and looked up the spectrum purity requirements. If I've deciphered the
governmentese properly, the FCC doesn't have any hard fast numbers on spur
levels *above 2 meters* -- just some boilerplate about not causing harmful
interference. Just my interpretation -- I'm willing to have it corrected.

> Remember,
>you can't have too much test equipment. :-) Even antique military surplus
>test equipment is better than no test equipment at all.

So true, even if you're not homebrewing. Keeping your ham equipment, and
the family's consumer electronics, in good repair is a good enough reason to
have some of the basics. What I consider "basics" include a DVM, a 'scope,
and a frequency counter (a counter is not *really* necessary, but you can
get one for $119 brand-new so why not have one?). Beyond that is a function
of your interests/needs, budget, and the size of your workbench. :-)
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think
lkollar@nyx.cs.du.edu | every ham should have to learn it.

262. Re: Ramsey Kits [was: Re: What equipment to tune up a Ramsey 146?]

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 14:46:10 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Jul26.144610.19766@mnemosyne.cs.du.edu>
Source record: 119879

dana@lando.la.locus.com (Dana H. Myers) writes:

>I never once recall finding anything in a Heathkit to "fix"; they
>were engineered well and worked right. Another Heathkit tended to do,
>in my recollection, was not sell things as kits that couldn't reliably
>be built.

Unfortunately, Heathkit is just Heath now. No "kit." Ramsey is no Heathkit,
true, but they're what we have these days. If kitbuilding gets popular again,
competition if nothing else will give us better-designed products.

Made though the first two stages of the FX-440... so far, so good. The hard
parts come next. :-)
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think
lkollar@nyx.cs.du.edu | every ham should have to learn it.

263. Re: How do TDR's work

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 15:26:55 UTC
From: glenne@sr.hp.com
Message-ID: <CAs2ww.3Ey@srgenprp.sr.hp.com>
Source record: 119880

David Moisan (moisan@bronze.lcs.mit.edu) wrote:
: Gary Coffman mentions a homemade TDR made of a pulser and oscilloscope with
: a calibrated timebase. How are the pulser, scope and cable under test
: connected? How do commercial units work? I'm intrigued (anything to get
: me away from the flamepit of rec.radio.amateur.policy...:))

Dave,

Older systems for measuring in the time domain used a tunnel diode pulse generator which sat "in line". When the diode snapped, a step with pretty short rise time was introduced and travelled both directions. As I recall, it was terminated in the direction of the measuring equipment but propagated toward the device under test, reflecting off of discontinuities along the way. The result was viewed, vs. time, with the receiver.

The better systems had rise times in the 30-100 picosecond range and therefore made reasonable distance/time resolution possible.

Now, most systems I know about, measure in the frequency domain and transform to (and back from) time domain. By taking equally spaced measurements in the frequency domain (perhaps extrapolated to DC as well, either bandpass or low pass response can be measured) a discrete Fourier transform can be performed to give time information.

Modern vector network analyzers can take the measurements and do the transform on the fly so that the user sees real time time/distance display with a variety of synthesized stimulii.

For example, using the low pass function, one can look down a transmission line and see capacitive and inductive discontinuities and measure their absolute positions and magnitudes. On microwave/millimeter analyzers, the resolution can be better than the older impulse generators.
Another advantage of the time domain measurement is that "gating" can be added. Essentially the time domain data is masked with an appropriate "window" so that responses due to reflections at time delays not associated with the location of the desired device under test can be eliminated. If desired, the time record can than be converted *back* to frequency domain and the result is the reflection characteristics (or S parameters, magnitude, phase, group delay or whatever you want) of just the DUT with systemic hardware errors removed . Time gating is an addition to the normal error correction process made possible by vector network analysis using "calibration standards" which allow the user to characterize the imperfections of his measurement hardware and mathematically remove their contributions to the measurement error.

Another way such measurements are made now is with "shock lines".
These are non-linear distributed components with variable reactance
(usually capacitance) elements spread along their length in some
fashion. When stimulated with an edge (or even a sinusoid sometimes)
the X vs V curve of the variable reactance causes a steepening of the
edge(s). Edges with risetimes in the 1-10 picosecond range are possible
with these devices. These edges can in turn be used to stimulate a DUT
or to drive a diode sampler (about like a harmonic mixer) to
downconvert and recover the desired measurement information. Time and
frequency domain analysis in the several-hundred-GHz range is possible
with these systems.

Whether one uses tunnel diodes, shock lines or measures in the
frequency domain with multiple high frequency sinusoids and transforms I
think that all the TDR techniques rely on an impulse or a simulated
impulse in order to extract data.

For home construction, it used to be that only a direct impulse
generator, like a tunnel or step recover diode, could be considered.
However with the capability of PC hardware I think that better systems
could be built.
I suspect that a shockline could be built at home which could give perhaps
sub nano-second resolution. This would certainly be useful for many hamshack
measurements.
Also, building a vector network analyzer and doing the conversion to
time domain in the PC is not out of the question.

73
Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

264. Re: Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 15:30:11 UTC
From: Steven Lindell <slindell@haverford.edu>
Message-ID: <230ta3$hg0@venus.haverford.edu>
Source record: 119881
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

In article <22s3kv$1cd@access.digex.net> John Cormack,
cormackj@access.digex.net writes:
>I hear the tuning to get stereo is very critical. The light comes on for
a
>very wide range of tuning but stereo works only when the freq is very
>close to 19 khz. I have the same problem with my FM-10. Sound quality is
>great but mono.

I once built an FM trasnmitter board based on the same BA1404 chip,
except that the 19 kHz carrier was crystal controlled (at 38khz). This
might be the way to go.

265. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 16:23:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <26JUL199317232140@siva.bris.ac.uk>
Source record: 119882

In article <1993Jul26.143925.19363@mnemosyne.cs.du.edu>, lkollar@nyx.cs.du.edu (Larry Kollar) writes...
>gary@ke4zv.uucp (Gary Coffman) and I go back and forth in a friendly fashion...
>see, you don't have to flame to have a discussion on Usenet! :-)

>I got curious & grabbed a friend's copy of the FCC Rule Book over the week-
>end and looked up the spectrum purity requirements. If I've deciphered the
>governmentese properly, the FCC doesn't have any hard fast numbers on spur
>levels *above 2 meters* -- just some boilerplate about not causing harmful
>interference. Just my interpretation -- I'm willing to have it corrected.

In the UK, I'm pretty sure that the license requires you to be able to prove you're transmitting in-band, and with no harmful harmonics. It does not require you to own the equipment, but only to have access to it (e.g. at your place of work). It suggests that for Xtal-controlled transmitters that a counter to check the Xtal is on frequency, and an absorption wavemeter to check you've picked the right harmonic for the final output and that you're not emitting significant power out of band.

>
>> Remember,
>>you can't have too much test equipment. :-) Even antique military surplus
>>test equipment is better than no test equipment at all.

If you buy good brands (Racal,Tektronix,HP,etc), old equipment is often much better than the new stuff that most Hams could afford. My 'scope (a Tekky 555 with 1A1,1A5,M,P,1S1,H plugins) cost me about 70 pounds total including the service manuals. Although it claims to be a 33MHz unit, it routinely out-performs some Hitachi 50MHz 'scopes we have in the University here, and which cost about 400 pounds new, with no service manual. Apart from the fact that such equipment has a nice 'feel' to it, and is reliable.

>
>So true, even if you're not homebrewing. Keeping your ham equipment, and
>the family's consumer electronics, in good repair is a good enough reason to
>have some of the basics. What I consider "basics" include a DVM, a 'scope,
>and a frequency counter (a counter is not *really* necessary, but you can

I'll add : a logic probe (essential if you intend to repair digital stuff and don't have a storage 'scope/logic analyser), Analogue voltmeter (can do a few things, like estimate mark-space ratio that are difficult on a DVM), and of course a continuity tester (saves a lot of time if you are tracing connections/looking for switch faults). Yes, you can use a DVM, but the continuity-beep function of most cheap DVMs seems to work by comparing the reading on the Ohms range with some constant, and takes several seconds between connecting the probes and beeping. A quick-acting tester is useful if you want

to check out a multi-core cable for example.
Not forgetting the home-brew stuff that every electronics hacker accumulates
:-)

>get one for $119 brand-new so why not have one?). Beyond that is a function
>of your interests/needs, budget, and the size of your workbench. :-)

$119 is a very good reason for me not to have one :-(. Mind you, I found a
couple going in the trash a couple of weeks back, and have restored one
already. OK, so it's only 10MHz, but I guess the build quality (It's a Racal
835) is much better than the $119 one you mentioned.

>--
>Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think
>lkollar@nyx.cs.du.edu | every ham should have to learn it.
-tony

266. Re: Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 16:39:10 UTC
From: mcovingt@aisun6.ai.uga.edu
Message-ID: <CAs69B.9pD@athena.cs.uga.edu>
Source record: 119885
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

In article <22vptbINN4th@lynx.unm.edu> roberts@triton.unm.edu (Robert Smathers) writes:
>In article <CAnHq1.MHp@athena.cs.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>>
>>I built an FM-10 this evening. It works fine except that the output is
>>not stereophonic. The receivers recognize it as stereo, and turn on
>>their "stereo" light, but there is little or no separation of the two
>>channels. Also, the two inputs of the FM-10 are not equally sensitive,
>>and I can't make them so by turning the balance control.
>
>Yep, that is a major problem with the FM-10 (and a good complaint
>of mine!) -- that is why I usually use it with one audio input instead
>of the two L-R ones.

If I do that, I'll disable the 38-kHz oscillator so as to transmit "pure" monophonic FM, rather than ersatz stereo. I may well opt for monophony. The application is to relay the signal from our main stereo system to various other locations in the house, including headphones. Stereophony is not really necessary for that.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

267. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 16:40:25 UTC
From: mcovingt@aisun6.ai.uga.edu
Message-ID: <CAs6BE.9ss@athena.cs.uga.edu>
Source record: 119883

I think some of the purity requirements are in Part 15, not Part 97.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

268. Kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 16:46:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <26JUL199317465762@siva.bris.ac.uk>
Source record: 119884

The current discussion about Ramsey kits has made me think about the kits that I've built over the years, and their relative quality. I'll post comments below on the companies that I've dealt with. Note that I'm in the UK, so I'm talking about the companies that are found here, but of course I would be interested in hearing experiences on others.

Here goes :

Heathkit

Alas no more, these have to be the best kits ever!. Very clear instructions, good components (and all the right ones), complete (includes case, screws,solder, wire, etc) and both the ones I tried worked first time. Rather expensive though.

Velleman

Belgian (I think), and therefore with international instructions, but understandable none-the-less. Good quality components/circuit board, but no case or solder. Small components (Resistors, Diodes, even link wires) supplied on a strip in the order that the instructions tell you to insert them. I've had one capacitor wildly off-value (but marked correctly), but no other problems. Also, programmed chips (like eproms/microcontrollers) have original markings removed and replaced with a Velleman house-code, which can be a pain.

Cirkit

Many problems, from components that did not agree with the instuctions (e.g. coils with totally different pin-outs), capacitors that drifted, and very poor instructions. In one case, the kit was 2 PCBs and there were NO details of how to connect them together (no, it was not a simple 1-1 cable either). I had to delve into the Z80 data book to sort it out. Technical support service seems to be non-existant (they did not reply to my letters). Have a good range of Ham radio stuff, but I don't trust them!. Oh, and kits designed to work together often don't without modifications, and I could not get them to fit into the recomended case ! Kits are also incomplete (by my standard) - like including the PCB half of internal connectors only!

Ramsey

Components seem to be good quality, but the designs seem to need work. I have only built one of their kits (the FR146 2m Rx), and had 4 capacitors of incorrect value. Also, seems to have cost-cutting practices, like using a reverse-biased transistor as a Zener. How the AFC works in the FR146 beats me!. Instructions not too bad. I recommend these for people who want a start in their own design - i.e. use the kit as a basis for a homebrew

Maplin

The main hobbyist supplier in the UK, who market their own range of kits (as well as Ramsey, Heathkit, and Velleman). Their kits are relatively complete (i.e. include IC sockets and sometimes case/knobs/etc), and the instructions are reasonable. No step-by-step building though, more a case of 'Following the parts list, fit the resistors to the PCB and solder them). More detail for the external wiring though. Designs not bad in general. Large range of kits (but NO transmitters), including test gear (logic probe, frequency counter), receivers (e.g. 160m direct conversion, NICAM TV tuner/decoder), computer stuff (Z80 CPU, PC 24 line I/O port), Audio (amplifiers, mixer modules, etc), and fun stuff (Digital voice recorder, musical Xmas cards, etc) and more. Technical support was helpful the one time I needed to use it (I've built many of these kits!). Cheaper than the others, and seem to be good value if you have some experience in construction. Oh, and the instructions tend to be published in a monthly magazine, so you can see what you are getting, and how it was designed. All the parts (including the PCB) are Maplin catalogue items, so you can get spares.

Disclaimer : Other than building their kits, and purchasing other products from them, I have no connection with any of the above companies.

-tony

269. need address of arrl kit maker....

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 18:23:08 UTC
From: ksampath@magnus.acs.ohio-state.edu
Message-ID: <2317ec$lm1@charm.magnus.acs.ohio-state.edu>
Source record: 119886
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.info,rec.radio.amateur.homebrew

is there a company making kits for the swr/powermeter with
digital display project in the arrl handbook?

any info appreciated. i would like to build this....

thanks es 73
krishna
kb8fav

--
dr krishna s. sampath...senior research associate...kss@lenz.eng.ohio-state.edu
ohio state u, electroscience lab......(614) 292-7981 (w).....(614) 292-7297 (f)
1320 kinnear rd, columbus, oh 43212..06/93 ee phd looking for emi/emc/comm. job
---

270. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 19:54:53 UTC
From: alanb@sr.hp.com
Message-ID: <CAsFBI.AzG@srgenprp.sr.hp.com>
Source record: 119887

Larry Kollar (lkollar@nyx.cs.du.edu) wrote:

: I got curious & grabbed a friend's copy of the FCC Rule Book over the week-
: end and looked up the spectrum purity requirements. If I've deciphered the
: governmentese properly, the FCC doesn't have any hard fast numbers on spur
: levels *above 2 meters* -- just some boilerplate about not causing harmful
: interference. Just my interpretation -- I'm willing to have it corrected.

After the boilerplate come the specific numbers. From the FCC reg's:

97.307 Emission standards.

(a) No amateur station transmission shall occupy more bandwidth than
necessary for the information rate and emission type being transmited,
in accordance with good engineering practice.

(b) Emissions resulting from modulation must be confined to the band
or segment available to the control operator. Emissions outside the
necessary bandwidth must not cause splatter or keyclick interference
to operations on adjacent frequencies.

(c) All spurious emissions from a station transmitter must be reduced to
the greatest extent practicable. If any spurious emission, including
chassis or power line radiation, causes harmful interference to the
reception of another radio station, the licensee of the interfering
amateur station is required to take steps to eliminate the interference,
in accordance with good engineering practice.

[And now the numbers:]

(d) The mean power of any spurious emission from a station transmitter
or external RF power ampolifier transmitting on a frequency below 30 MHz
must not exceed 50 mW and must be at least 40 dB below the mean power
of the fundamental emission. For a ttransmitter of mean power of
less than 5 W, the atttenuation must be at least 30 dB. A transmitter
built before April 15, 1977, or first marketed before January 1, 1978,
is exempt from this requirement.

[Note: a 1.5 kW power amp must have 44.8 dB harmonic rejection.]

(e) The mean power of any spurious emission from a station transmitter
or external RF power amplifier transmitting on a frequency between
30-225 MHz must be at least 60 dB below the mean power of the
fundamental. For a transmitter having a mean power of 25W or less, the
mean power of any spurious emission supplied to the antenna transmission
line must not exceed 25 uW and must be at least 40 dB below the mean
power of the fundamental emission, but need not be reduced below the

power of 10 uW. A transmitter built before April 15, 1977, or first marketed before January 1, 1978, is exempt from this requirement.
..

AL N1AL

271. Re: PROJECT 2: 20 METER QRP CW XMTR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 22:48:18 UTC
From: rking@rking.auspex.com
Message-ID: <18282@auspex-gw.auspex.com>
Source record: 119888

>
> Here's the second QRP project taken from 101 EASY HAM RADIO PROJECTS,
>by Robert Brown and Tom Kneitel; again, since the book is out of print,
>I assume there will be no copyright problems...
>

Hmmm....

For reference sake not a good assumption. Every time I've seen a statement like yours in cyberspace (Internet,AOL,CompuServe,et al) I've usually seen a counter-claim by someone in the know. They usually say that until the authors *explicitly* release their copyright it is still protected.

Just thought you should know.

Richard King

272. Attn QRP(p)ers!!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-26 23:28:41 UTC
From: swamik@orca.NoSubdomain.NoDomain
Message-ID: <CAsp7t.Fq7@egr.uri.edu>
Source record: 119889

Hi!

I am a newbie to QRP. I just purchased an MFJ 20m qrp rig. I am asking QRP(p)ers in New england (actually 1 land and 2 land) to send me email with some info abt their setup. i.e. Call, Name, QTH, rig(s), pwr, band(s), freq(s), etc.

Perhaps we could even start a small net for people new to, interested in, or long time qrp(p)ers. I know their are other nets, but maybe a new small new england one would be nice.

Please respond with the info asked for to
swamik@orca.ele.uri.edu
Subject of msg should be QRPLIST (I have written a simple prog to filter out these msgs and compile them into a file.) I will post the list when I am finished.

Swami Kumaresan
swamik@orca.ele.uri.edu
swamik@morio.e-technik.uni-kl.de
KB1AMB@KA1AZ.RI (Ham Radio BBS)
kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)

KB1AMB/AA Advanced Class Amateur Radio Operator
I Monitor 147.165/.765 Repeater
& 20 meter band (SSB & CW)

73s

---

273. Copyright... was: Re: PROJECT 2: 20 METER QRP CW XMTR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 00:59:07 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CAstEK.Asn@athena.cs.uga.edu>
Source record: 119890

In article <18282@auspex-gw.auspex.com> rking@rking.auspex.co writes:
>>
>> Here's the second QRP project taken from 101 EASY HAM RADIO PROJECTS,
>>by Robert Brown and Tom Kneitel; again, since the book is out of print,
>>I assume there will be no copyright problems...
>
>For reference sake not a good assumption. Every time I've seen a statement
>like yours in cyberspace (Internet,AOL,CompuServe,et al) I've usually seen
>a counter-claim by someone in the know. They usually say that until the
>authors *explicitly* release their copyright it is still protected.

The copyright is still valid but the author will have a hard time claiming
you caused him loss of income, if the book is out of print. Thus,
copying something noncommercially in that situation is relatively safe.

Never do any kind of _commercial_ or _market-destroying_ republication of
anything that has a valid copyright, unless you have permission.
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

274. Re: Copyright... was: Re: PROJECT 2: 20 METER QRP CW XMTR

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 05:43:10 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CAt6Jy.E6K@news.Hawaii.Edu>
Source record: 119891

In article <CAstEK.Asn@athena.cs.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>In article <18282@auspex-gw.auspex.com> rking@rking.auspex.co writes:
>>>
>>> Here's the second QRP project taken from 101 EASY HAM RADIO PROJECTS,
>>>by Robert Brown and Tom Kneitel; again, since the book is out of print,
>>>I assume there will be no copyright problems...
>>
>>For reference sake not a good assumption. Every time I've seen a statement
>>like yours in cyberspace (Internet,AOL,CompuServe,et al) I've usually seen
>>a counter-claim by someone in the know. They usually say that until the
>>authors *explicitly* release their copyright it is still protected.
>
>The copyright is still valid but the author will have a hard time claiming
>you caused him loss of income, if the book is out of print. Thus,
>copying something noncommercially in that situation is relatively safe.
>
>Never do any kind of _commercial_ or _market-destroying_ republication of
>anything that has a valid copyright, unless you have permission.
>--

Gang,
Both books that I am getting these circuits from have a copyright date
of 1968 - 25 years ago. This is why I believe it is not a violation is place
them on the net. I'll check with one of the law school professors here to
get an opinion.
Both these books are a goldmine of circuits that I would really love to
pass on to you folks. Stay tuned...

Jeff, NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@Hawaii.Edu

275. Re: Kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 12:20:40 UTC
From: kell@lark.jsc.nasa.gov
Message-ID: <1993Jul27.172308.5904@aio.jsc.nasa.gov>
Source record: 119895

In article <26JUL199317465762@siva.bris.ac.uk>, ard@siva.bris.ac.uk (PDP11 Hacker .....) writes...
>The current discussion about Ramsey kits has made me think about the kits that
>I've built over the years, and their relative quality. I'll post comments below
>on the companies that I've dealt with. Note that I'm in the UK, so I'm talking
>about the companies that are found here, but of course I would be interested in
>hearing experiences on others.
>
.
.
.
>
>-tony
>
for the benefit of thos of us on the west side, could you provide some sort of address for your kit producers. A couple of them sounded like it might be worth the effort to get a catalog.

Thanks

Ted Kell@lar.jsc.nasa.gov

276. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 14:18:01 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <233dep$qoj@news.acns.nwu.edu>
Source record: 119892

In article <1993Jul26.143925.19363@mnemosyne.cs.du.edu> lkollar@nyx.cs.du.edu (Larry Kollar) writes:

A few lines deleted for brevity ...

>I got curious & grabbed a friend's copy of the FCC Rule Book over the week-
>end and looked up the spectrum purity requirements. If I've deciphered the
>governmentese properly, the FCC doesn't have any hard fast numbers on spur
>levels *above 2 meters* -- just some boilerplate about not causing harmful
>interference. Just my interpretation -- I'm willing to have it corrected.

Well, the rules seem somewhat different from that. To quote from 97.307 para (e):

"The mean power of any spurious emission from a station transmitter or exter RF power amplifier transmitting on a fewquency between 30-225MHz must be at least 60 db below the mean power of the fundamental. For a transmitter having a mean power of 25 watts or less, the mean power of any spurious emission supplied to the antenna transmission line must not exceed 25uW and must be at least 40 db below the fundamental emission but need not be reduced below 10uW."

When the Ramsey FX146 is run at rated power (if you can get it do that) then the 25uW limit is binding and the spurs have to 55db down from the average power of the fundamental. The limit jumps to 60db down if the output of the Ramsey is amplified by an external amplifier to above 25W. This assumes that the amp does not add any spurs.

Rajiv
aa9ch
Address: r-dewan@nwu.edu
Phone: None on HF. Only CW.
Look for aa9ch/m on bottom end of 10m-80m.

277. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 14:21:49 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Jul27.142149.10385@mnemosyne.cs.du.edu>
Source record: 119893

ard@siva.bris.ac.uk (PDP11 Hacker .....) writes:

>... continuity tester (saves a lot of time if you are tracing
>connections/looking for switch faults). Yes, you can use a DVM, but the
>continuity-beep function of most cheap DVMs ...
>... takes several seconds between
>connecting the probes and beeping.

My Rat Shack DVM's continuity tester is fast enough that I was able to test a CW keyer with it. I turned off the sidetone, hooked in the DVM and started sending a little code. The beeper beeped the dits and dahs just fine! It was $25 US -- *I* think that was a cheap DVM. :-)

>>freq. counter
>$119 is a very good reason for me not to have one :-(. Mind you, I found a
>couple going in the trash a couple of weeks back, and have restored one
>already. OK, so it's only 10MHz, but I guess the build quality (It's a Racal
>835) is much better than the $119 one you mentioned.

I actually have an old Systron/Donner I got surplus for $10 that works well into the VHF range (it's rated for 500 MHz, but you have to drive it hard to get that I'm told). The handheld is more sensitive and rated to 1.2 GHz, for those not well-connected to the trashcan. :-)

Now if I could only find a spectrum analyzer in someone's dumpster. :-) :-)
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think
lkollar@nyx.cs.du.edu | every ham should have to learn it.

278. Re: How do TDR's work

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 15:41:13 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul27.154113.1135@ke4zv.uucp>
Source record: 119896

In article <230ev6$b85@bronze.lcs.mit.edu> moisan@bronze.lcs.mit.edu (David Moisan) writes:
>Gary Coffman mentions a homemade TDR made of a pulser and oscilloscope with
>a calibrated timebase. How are the pulser, scope and cable under test
>connected? How do commercial units work? I'm intrigued (anything to get
>me away from the flamepit of rec.radio.amateur.policy...:))

```
pulser---T--cable under test
|
scope
```

Ideally, both the pulser and scope are connected to the T without any extra cabling. Either the scope should be terminated in the characteristic impedance of the line, or it should be set to high impedance and the pulser be followed by a pad of the line's characteristic impedance. 1 meter in free space is 3.33 microseconds. On our cable, we have to adjust for velocity factor. For typical coax that's 3.33/.66 or 5.05 microseconds per meter. And because our instrument depends on a return pulse, we double that to 10.1 microseconds per meter. Now our pulse waveform can either be a narrow spike pulse, or an edge of a very low duty cycle pulse. The latter is easier. If our rising edge is sharp, say less than a microsecond, we can resolve reflections to within 10 cm on the cable. The greater the resolution we want, the faster the risetime of the edge we require. Reflections will look like this

```
_
_________________ ______ ____________| |_______
| |_| or |
__| __|
```

depending on the direction of the impedance change at the bump. The time from the rising edge of the pulse to the leading edge of the bump is the distance down the line in meters times 10.1. So divide the time reading by 10.1 and you have distance to the discontinuity. If you know the loss of the cable in db/ft, and it's characteristic impedance, you can use the ratio of amplitudes of the main pulse and the return pulse to determine the impedance at the discontinuity.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

279. Re: Science Workshop DIY spectrum analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 16:31:54 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul27.163154.1325@ke4zv.uucp>
Source record: 119897

In article <230fi9$bav@bronze.lcs.mit.edu> moisan@bronze.lcs.mit.edu (David Moisan) writes:
>Gary, you mentioned the Science Workshop spectrum analyzer kit. I emailed
>you on it but the msg went to La-La land. Some questions:
>
>1) Is this the same company mentioned in Joe Carr's ham columns in
>Popular Electronics? He did write a few columns on the subject,
>and, I believe, mentioned the company.

I don't know.

>2) I saw (or think I saw) their ad in Nuts and Volts. Intriguing, but
>$24 seems a lot for plans, sight unseen. Has anyone ordered the plans?
>
>3) Has anyone built one? Obviously, it's not Tek, and not $20,000 either--
>how well does it work? How hard was it to build? What other instruments
>(besides the scope) are needed?
>
>I've been hunting for a junked varactor tuner to start this project,
>and it'll probably be my first RF project. Am I on the right track?

I've received considerable Email on this topic. Let me tell you what I know. In searching the documentation that I got with the kits, I found no address, but I did find the following information:

The designer, and owner of Science Workshop, is Murray Barlowe, WA2PZO. I assume a note to his callbook address would get a response. Also on the page was a handwritten note saying he could be reached at 516-731-7628.

The kit consists of several subassemblies. The SW-6006 is the main receiver board and has a selection of selectivity options from 200 kHz down to 30 kHz. It has a log video amplifier whose output drives the Y channel of the oscilloscope display. It also has FM and AM detectors for monitoring the signal in zero dispersion mode.

The SW-6001 is the high linearity ramp generator board. It has two outputs. One goes to the X channel of the oscilloscope. The other output goes to the SW-5800 modified cable tuner which forms the RF front end of the analyzer. It covers 10 MHz to 500 MHz in one range. That range can be tailored by pots in the line between the ramp generator and the tuner. You can use a DC offset via one pot to give a center frequency, and vary the amplitude of the ramp to give varying dispersion.

The SW-5900 is another specially modified cable tuner that is used as the tracking generator. It takes a sample of the swept VCO from the SW-5800 and a sample of the SW-6006 LO and mixes them to make a tracking on-frequency signal for applying to the device under test.

The final part is the SW-6007 center frequency display board. This takes a sample from the SW-5900 prescaler and converts it to a voltage that can be displayed on a DVM and is calibrated to give a direct frequency readout. 1.00 volts equals 100 MHz. Naturally, this is only useful in the zero dispersion mode. I use an LCD panel meter I happened to have on hand as the readout.

Assembling the kit. The tuners are already modified for service. The main board, the ramp board, and the frequency display board are single sided and go together quickly. You'll spend most of your time packaging and interconnecting the modules. I didn't buy the case, it wasn't available until this year, and packaged my kit in a Bud chassis box that tucks into the cabinet of the 14 inch Wavetek XY display I use instead of an oscilloscope.

Cost. The main kit cost $125, the tracking generator was an extra $50, and the frequency display board and optional selectivity options added another $25 for a total of $200 at Dayton Hamvention prices. I don't have a current price sheet from Science Workshop.

The basic instrument is sensitive and stable. It's calibration is not lab grade, but it will show many signals in the FM broadcast band from my workshop with only a short wire hooked to the tuner. Since I have a more professional analyzer, I use it mainly for tuning up cavity duplexers. It's a champ for that service and is an adequate substitute for a $15,000 IFR-1500 for that use. It also makes a fine wideband spur hunter. For precise measurements, I depend on the Tek491, but for quick looks, the SW unit is excellent. If I had to choose between the two, it would be hard because the tracking generator makes the SW analyzer so useful.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

280. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 16:40:57 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul27.164057.1547@ke4zv.uucp>
Source record: 119900

In article <1993Jul26.143925.19363@mnemosyne.cs.du.edu> lkollar@nyx.cs.du.edu (Larry Kollar) writes:
>I got curious & grabbed a friend's copy of the FCC Rule Book over the week-
>end and looked up the spectrum purity requirements. If I've deciphered the
>governmentese properly, the FCC doesn't have any hard fast numbers on spur
>levels *above 2 meters* -- just some boilerplate about not causing harmful
>interference. Just my interpretation -- I'm willing to have it corrected.

97.307(e) I believe. The rule is 60 db down or 25 microwatts, whichever is less.

>> Remember,
>>you can't have too much test equipment. :-) Even antique military surplus
>>test equipment is better than no test equipment at all.
>
>So true, even if you're not homebrewing. Keeping your ham equipment, and
>the family's consumer electronics, in good repair is a good enough reason to
>have some of the basics. What I consider "basics" include a DVM, a 'scope,
>and a frequency counter (a counter is not *really* necessary, but you can
>get one for $119 brand-new so why not have one?). Beyond that is a function
>of your interests/needs, budget, and the size of your workbench. :-)

Well my list of vital test equipment is headed by the oscilloscope. It can serve for voltage and frequency measurements too in a pinch. I'd also include a DVM *and* an analog meter, a frequency counter is nice, and of course a good signal generator and spectrum analyzer. If you do logic, a logic probe and pulser are basic. Better is a full fledged logic analyzer, or at least a signature analyzer. A good commercial transceiver is very useful as both a monitor and a signal generator. But remember that the most important part of the test setup is between your ears.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

281. Vacuum tubes for sale

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 16:51:27 UTC
From: jczilli@engn.uwindsor.ca
Message-ID: <4563@newsserver.cs.uwindsor.ca>
Source record: 119894
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.swap,rec.radio.amateur.equipment

I have the following tubes which I am offering to the highest bidder.
They are transmitting and/or gen. amplifier tubes:

tube quantity

1625 3
1626 1
810 1 (big tube!)
6GH8A 4
6BQ5 4
6BA6 3

They are all used, and thus I can make no guarantee of their
condition. I have no idea if their is a demand for these tubes, so if
you need any of them, email me with an offer.

Thanks!

James

jczilli@engn.uwindsor.ca

282. 40m CQ kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 18:14:23 UTC
From: djadams@silver.ucs.indiana.edu
Message-ID: <CAu5C0.52y@usenet.ucs.indiana.edu>
Source record: 119898

Greetings! While waiting for my license, I've decided
to build the 40 m kit described in CQ magazine (to be in 6 installments).
I remeber someone mentionning that the parts list was wrong and a few
other complaints....if someone who has successfully built part 1
and or 2 could mail me any addendum to the articles, I would appreciate
it!!! Thanx.

73 de Dave TBA

David J Adams Internet: djadams@silver.ucs.indiana.edu
Amiga User and Flow Cytometry Advocate
Currently Handfeeding 3 Green-Cheeked Conures...taking deposits!
Weaning approximately Mid-July. God Bless America.

283. Re: Ramsey FM-10 question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 18:32:25 UTC
From: wells@hpfcso.FC.HP.COM
Message-ID: <150560001@hpfcso.FC.HP.COM>
Source record: 119905

The quickest way to set the 19 khz carrier on the FM10 is to put a low level and known to be accurate 19 khz signal into the audio jack and tune the capacitor for zero beat. This works quite well as there is no high end roll-off for the audio ckt.

Jon in the Fort

284. definition of homebrew?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 18:36:55 UTC
From: ksampath@magnus.acs.ohio-state.edu
Message-ID: <233sk7$o49@charm.magnus.acs.ohio-state.edu>
Source record: 119899

how do you define "homebrew"?
say, for a qrp contest, you want to use a homebrew xcvr...

a. you design, build and test it (definitely homebrew)
b. you buy a kit from mfj and assemble it (iffy)
c. you buy a used used qrp rig from someone who acquired
it via (a) or (b) above. (??)

curiously,
73 es cul
krishna
kb8fav/t

--
dr krishna s. sampath...senior research associate...kss@lenz.eng.ohio-state.edu
ohio state u, electroscience lab......(614) 292-7981 (w).....(614) 292-7297 (f)
1320 kinnear rd, columbus, oh 43212..06/93 ee phd looking for emi/emc/comm. job
---

285. Re: definition of homebrew?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 19:16:42 UTC
From: alanb@sr.hp.com
Message-ID: <CAu87v.193@srgenprp.sr.hp.com>
Source record: 119901

Krishna S Sampath (ksampath@magnus.acs.ohio-state.edu) wrote:
: how do you define "homebrew"?
: say, for a qrp contest, you want to use a homebrew xcvr...

: a. you design, build and test it (definitely homebrew)
: b. you buy a kit from mfj and assemble it (iffy)
: c. you buy a used used qrp rig from someone who acquired
: it via (a) or (b) above. (??)

or:
d. you buy a commercial radio and heavily modify it.

I would say a, b and d qualify as "homebrew."

AL N1AL

286. Crystal Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 19:36:32 UTC
From: kirkland@nimios.eng.mcmaster.ca
Message-ID: <1993Jul27.184223.558@mcshub.dcss.mcmaster.ca>
Source record: 119908

Does anyone out know of suppliers for crystal filters (i.e. single quantities)
for 9 - 10 MHz IF and 40 MHz IF or higher?

Thanks Bill Kirkland

reply to kirkland@comres3.Eng.McMaster.CA

287. Re: definition of homebrew?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 19:54:25 UTC
From: ksampath@magnus.acs.ohio-state.edu
Message-ID: <23415h$ob0@charm.magnus.acs.ohio-state.edu>
Source record: 119902

In article <CAu87v.193@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>Krishna S Sampath (ksampath@magnus.acs.ohio-state.edu) wrote:
>: how do you define "homebrew"?
> ...some definitions....
>or:
> d. you buy a commercial radio and heavily modify it.
>
>I would say a, b and d qualify as "homebrew."
>
>AL N1AL
>
now we get into the definition of "heavily" modifying a rig.
does clipping a pair of diodes to get extended transmit count?
or removing a couple of surface mounted pads...?

krishna
kb8fav

--
dr krishna s. sampath...senior research associate...kss@lenz.eng.ohio-state.edu
ohio state u, electroscience lab......(614) 292-7981 (w).....(614) 292-7297 (f)
1320 kinnear rd, columbus, oh 43212..06/93 ee phd looking for emi/emc/comm. job
---

288. Re: Kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 20:09:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <27JUL199321091597@siva.bris.ac.uk>
Source record: 119903

In article <1993Jul27.172308.5904@aio.jsc.nasa.gov>, kell@lark.jsc.nasa.gov writes...
>In article <26JUL199317465762@siva.bris.ac.uk>, ard@siva.bris.ac.uk (PDP11 Hacker .....) writes...
>>The current discussion about Ramsey kits has made me think about the kits that
>>I've built over the years, and their relative quality. I'll post comments below
>>on the companies that I've dealt with. Note that I'm in the UK, so I'm talking
>>about the companies that are found here, but of course I would be interested in
>>hearing experiences on others.
>>
>..
>..
>..
>>
>>-tony
>>
>for the benefit of thos of us on the west side, could you provide some sort of
>address for your kit producers. A couple of them sounded like it might be
>worth the effort to get a catalog.

Sure. Maplin do what little Heathkit still remains, some Ramsey, the entire
range of Velleman (they claim to be the UK agents for them), and, of course,
their own range.

The catalogue is #2.75 for UK customers. Carriage is #5.50 for surface mail to
the rest of the world, and #10.95 air-mail. It's a thick book (about 700 pages)
and contains pinouts and some application circuits for the ICs etc.
Anyway, the address/phone number is :

Maplin Electronic Supplies
P.O.Box 3
Rayleigh
Essex SS6 8LR.
England

Sales : +44 702 554161
Customer services (non technical) +44 702 552911
Tech enquiries (2pm-4pm GMT/BST Only) +44 702 556001

Hope this helps. I don't have an up-to-date Cirkit Catalogue here, but could
get the info if anyone's interested. I'm not sure they ship overseas though.
Maplin certainly do.

>
>Thanks
>
>Ted Kell@lar.jsc.nasa.gov

-tony

289. Re: definition of homebrew?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-27 21:28:15 UTC
From: whs70@dancer.cc.bellcore.com
Message-ID: <1993Jul27.212815.12380@porthos.cc.bellcore.com>
Source record: 119904

In article <CAu87v.193@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>Krishna S Sampath (ksampath@magnus.acs.ohio-state.edu) wrote:
>: how do you define "homebrew"?
>: say, for a qrp contest, you want to use a homebrew xcvr...
>
>: a. you design, build and test it (definitely homebrew)
>: b. you buy a kit from mfj and assemble it (iffy)
>: c. you buy a used used qrp rig from someone who acquired
>: it via (a) or (b) above. (??)
>
>or:
> d. you buy a commercial radio and heavily modify it.
>
>I would say a, b and d qualify as "homebrew."
>AL N1AL

I would also add

e. You build the rig yourself from plans in a magazine (e.g. QST
construction article).

As Al said, a, b, d (and now e) pretty much qualify although the
degree of how much mods were done in (d) could be an issue.

73s

Bill K2UNK

290. Re: definition of homebrew?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-28 06:01:20 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Jul28.060120.4354@ke4zv.uucp>
Source record: 119906

In article <233sk7$o49@charm.magnus.acs.ohio-state.edu> ksampath@magnus.acs.ohio-state.edu (Krishna S Sampath) writes:
> how do you define "homebrew"?
> say, for a qrp contest, you want to use a homebrew xcvr...
>
> a. you design, build and test it (definitely homebrew)
> b. you buy a kit from mfj and assemble it (iffy)
> c. you buy a used used qrp rig from someone who acquired
> it via (a) or (b) above. (??)

If it requires the soldering iron to get hot, or the wirewrap gun to rev up, it's homebrew, at least to some extent. Thus 'c' doesn't qualify. 'a' is the purist definition, but I think that kits and projects built from magazine articles should also be included. I don't think simple mods to commercial equipment count unless you change more than 50% of the circuitry. Then the commercial content becomes only subassemblies.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

291. Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-28 14:47:08 UTC
From: richard@alaska.et.byu.edu
Message-ID: <=w$@byu.edu>
Source record: 119907

I think I have a unique question.

There is a radio station here in Utah that covers event here at BYU (Brigham Young Universtiy - Provo, Utah). It is KSL 1160 kHz. I am lucky that it is a clear channel station operating at 50 kW.

I want to design and build a radio that is optimised to receive this station at great distances. The radio can be broken down in four categories. Antenna - Narrow band Pre-amp - Filter - mixer and/or mixer - audio.

I have been reading a lot of books for help and these are the conclusion I have come to.

A. The ferrite core of the antenna needs to be long and wide. I intend to make it 1"x20". The coil should exist over most of the length of the rod so that the maximum number of turns for a given inductance is achieved. Also the amount of inductance should be minimized to increase the S/N radio. I have chosen 70 microH. for the design. This also increase the possible Q.

B. The design of the antenna and the pre-amp is going to be as symetrical as possible all enclosed in an electrostatic shield to make sure the null is the deepest it can be.

C. The filter is either going to be an RL or a crystal filter. This part I haven't really thought about yet.

D. Mixer/Detector This is the part I have a question on. Which method is the best for my type of reception. I know of the following types.

1. I could use a MC1496 and directly modulate the signal to the audio band.
2. Just use a diode detector and don't mess with anything else.
3. Use a diode ring or JFET ring like the SD8901
4. Use a single JFET
5. Use a PLL.

Would you happen to know which of these methods or another one that you know about would be the best to use for weak signal listening.

Thanks for any of the help you can offer me.

Richard

292. homebrew simplex/pager radio

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-07-31 19:51:55 UTC
From: dreamer@lhaven.UUmh.Ab.Ca
Message-ID: <HLyjt*etx@lhaven.UUmh.Ab.Ca>
Source record: 119909

We're talking about emergency prepardness here, there's even talk that we should deliberately call out for an emergency. Of course were not in the best of position right now either. The city is depending on its Cellular phones, and we only have the one repeater....which we'll probably lose at the end of the year (we pay $1 per month now, but now that the phone company has been privatized they want us to pay $100 per month just like everybody else).

Anyways, I'm looking for homebrew plans to build a simple pager type radio, suitable for alerting all Amateurs of an emergency. It should be small to fit in one's shirt pocket. And, probably work on UHF (440)....or VHF on 2m. And, trigger on some audible tone....like DTMF 0. I can be receive only, and probably will be....but transmit capability would be a nice extra.

Should be something simple to build too....something a bunch of amateurs can put together in one night or a couple nights, as an activity....

--
"Just a Crazy Engineer with an Amiga and an HP48sx" - The Dreamer
Email: dreamer@lhaven.uumh.ab.ca or "Lawrence Chen" @ 1:134/3002
PHONE: +1 403 526 6019 FAX: +1 403 529 5102 CIS: 74200,2431
Lunatic Haven BBS: +1 403 526 6957 | Packet: @VE6FRM.#HAT.AB.CAN.NA
Praxis Society K12 BBS: +1 403 529 1610 | Callsign: VE6LKC

293. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-01 09:11:52 UTC
From: zlau@arrl.org
Message-ID: <1925@arrl.org>
Source record: 119821

In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>In article <qx$@byu.edu> richard@alaska.et.byu.edu (Richard B. Christensen) writes:
>>I am not sure why I need an IF stage. We learned in a class that it
>>is the first stage of amplification that determines the noise figure
>>of the receiver. It would seem the logical choice to use a high gain,
>>narrow band, low noise amp after the antenna. Also two stages of
>>mixing would cause extra noise to be introduced, wouldn't it?
>
>This is called a TRF receiver. Another name for a very high gain
>narrow band amp is often *oscillator*. Gain distribution in a
>receiver is an important design criteria. What you were told
>in class is correct. The first stage basically sets the noise
>figure for the receiver, so you want a very low noise stage.
>Low noise figure, high gain, great selectivity, and stability are
>often contradictory factors in amplifier design. If your first stage
>has enough, but not too much, gain, typically 14-20 db, it will
>output a signal strong enough to override the noise contributions
>of the following stages. So it's the critical stage. The following
>stages can concentrate mainly on making gain and obtaining high
>selectivity without much concern for their noise figure. To maintain
>stability, it's usually wise to partition gain blocks at different
>frequencies so that inadvertant feedback from output to input, leading
>to uncontrolled oscillation, won't occur. Thus mixers and IF stages.

Perhaps.

For a high performance single channel AM broadcast receiver, many
of the reasons for a superhetrodyne approach go away. Internally
generated noise is rarely a problem at such frequencies, even with
terrible antennas. With a good antenna, it isn't worth worrying about,
since the background noise picked up by the antenna is so strong. Thus,
spending a lot of time on low noise RF design isn't recommended. Optimizing
the antenna or the audio amplifier may make more sense. Distortion
generated at audio tends to be more objectionable than that generated at
RF.

Another reason for the superhetrodyne is that it makes filtering a lot
easier. With most TRF setups, the bandwidth varies with frequency, so
lower frequency stations sound muffled while the high frequency ones blend
together. But, you can design your filters for optimum performance at
any one frequency fairly easily, while designing for constant bandwidth
across the AM band is more challenging.

Yes, amplifiers can certainly become oscillators. However, many
amateur stations generate a -10 dBm signal that becomes a +60 dBm signal,

all on the same frequency! Thus, it certainly is possible to get 70 dB of gain on one frequency. Since tuned radio frequency receivers use two frequency bands (audio and RF), getting 140 dB of gain out of a TRF is certainly feasible. By going to 3 frequency bands, (audio, IF, and RF), you can have a receiver that has very little shielding--just a good layout. This is quite important to a manufacturer who wants to make millions of cheap receivers at a competitive price.

Finally, there is a good reason for not using mixers if at all possible. They are typically the weak link in the system--they generate distortion products that are often objectionable. Mechanical filter and crystals can also cause problems, particularly when hit with too much signal. Thus, direct conversion and TRF systems often sound much better that more conventional commercial approaches.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

.

294. Hygain CB boards

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-01 15:39:44 UTC
From: wa2sff@cbnewsh.cb.att.com
Message-ID: <CB37IA.8IJ@cbnewsh.cb.att.com>
Source record: 119910

Does anyone still sell the Hygain CB boards?
I would like to convert them to 6 meter FM.
It should be easy to do. But am unwilling
to spend the time if I am the only one who can
do this since I have the boards.

About 10 years ago, converting them to 10 meter FM
was the in thing to to and I bought a few boards
and CB radios using the boards.

Joe Wilkes

295. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-01 16:41:06 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-744223261@unomaha.edu>
Source record: 119911
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

296. N2NJZ- musta missed it :(...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-01 20:54:25 UTC
From: ahall@ux4.cso.uiuc.edu
Message-ID: <23hai1$ar0@vixen.cso.uiuc.edu>
Source record: 119912

Hi,

I saw a posting by Mat M N2NJZ and was hoping that he would either repost his article (because it either expired or he cancelled it) or get in touch w/ me about the FT411E's Vox circuitry. Anyone else who could give me some insight as to what I need to make the 411e's vox circuitry work I woudl greatly appreciate any info!!! I think that the radio already has the relay and amp, but there is definitely something missing (and I don't like to be told that it is the YH-2 headset, because that big thing doesn't work too well w/ a bicycle helmet :) Any insight or info is greatly appreciated and I hope to hear from you !!

73's
Allen n9rzc

email to: ahall@ux4.cso.uiuc.edu or n9rzc@uiuc.edu

297. Re: Hygain CB boards

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 04:51:22 UTC
From: andrews@fms.com
Message-ID: <CB485n.1HC@fms.com>
Source record: 119913

In article <CB37IA.8IJ@cbnewsh.cb.att.com> wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>
>Does anyone still sell the Hygain CB boards?
>I would like to convert them to 6 meter FM.
>It should be easy to do. But am unwilling
>to spend the time if I am the only one who can
>do this since I have the boards.
>
>About 10 years ago, converting them to 10 meter FM
>was the in thing to to and I bought a few boards
>and CB radios using the boards.
>
>Joe Wilkes

I'm looking for a mod to convert _any_ 11m rig to 6m AM/SSB. Either post here or e-mail me direct. (I thought I remembered reading an articcle how to do it in an old Illegal CB manual using an 02A PLL).

Keep 6m alive and kicking!!!

--
·_ _· _·· ·_· · ·__ ··· ·_ _ ··_· __ ··· _·__ ··· _ __ ·_·_·_ _·
_·_· ___ ·_ ··· _ ·_·_·_ ___ ·_· __·

_· ___·· ___ ··_· ···

298. Re: PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 09:31:41 UTC
From: sdeadmin@sni.co.uk
Message-ID: <1993Aug2.093141.28756@sni.co.uk>
Source record: 119914

: |>My guess is 2.0 is the last version we're gonna see. I think it
: |>is three years old now. Written by grad students at Cal-Tech, I think
: |>they all granulated and went on to new projects.

: That's too bad. I use PUFF from the very beginning and still, I'am very pleased
: with it, though as said before, it's missing some important aspects. Commercial
: packages like Touchstone and SuperCompact are expensive, out of reach for
: the every Ham. If the items I mentioned were included it would be real
: competitive.

I'd agree with that! PUFF has go to be one of the best value for money packages
that any ham serious with RF can get.

: As I said, I wrote my own program to analyse a .PUF file for stability.

: |>> 2. Include noise analyses. So Noise Figure prediction can be done
: |>> on low noise amplifier designs.
: |>
: |>Please expand on this -- I think I'm missing something. On most low noise
: |>transistors, the optimum input match is a specified parameter. Are you
: |>saying there is a way to calculate this from the other S params? I'd
: |>appreciate a reference, if there is.
: |>

: Well, a couple of things:
: 1) If the device is not matched at Gamma opt. A designer often has to
: make a compromis between minimum noise and gain. (Use of constant
: gain circles and constant noise circles...) Again I had to write my
: own program to calculate the expected noise figure if the device is
: not properly matched.

: /Peter -PA3AEF-

Peter, in the meantime would you be willing to make your software available to
to others?
For my part I have a program which designs printed coupled lines (odd and even
impedance) and then generates a .puf file. Should be available in the UK in the
autumn/fall.

73's
Lehane
--
Lehane Kellett. G8KMH. Siemens Nixdorf Information Systems, Bracknell.
lehane@sni.co.uk
Standard disclaimers apply. Warranty void if opened.

299. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 13:01:24 UTC
From: agodwin@acorn.co.uk
Message-ID: <25277@acorn.co.uk>
Source record: 119915

In article <1993Jul30.141531.16626@ke4zv.uucp> gary@ke4zv.UUCP (Gary Coffman) writes:
>
>I use them mainly to check component gates when troubleshooting
>equipment that *once* worked. Trying to debug a design is a different
>problem. Ideally, I'd have a current probe instead of a logic probe.
>HP used to make one, but I haven't found one lately, and HP wanted
>too much money. The current probe is a great aid when you have a
>hammered line. It can tell you if the problem is a shorted output
>or input without having to cut traces.
>

I'd like to play with one of these - am I right in thinking they use a
magnetic, rather than a voltage pickup ? If so, there might be a problem
in finding the right signal on modern boards with closely spaced tracks.
However, it looks like an interesting homebrew project - maybe using
a pickup based on a junked floppy disc drive head ?

>The scope's great for viewing pulse trains, but I think that one
>shot events are best handled with the pulse catcher feature of the
>probe. A CRT flash may occur just as you look the other way, or
>go for coffee. Hanging the probe in the circuit will leave the latched
>pulse waiting for you.
>

There's always single-shot mode - the 'armed' light goes out when the 'scope
triggers, though it can suffer from false triggering (mine usually goes off
when the thermostat on the soldering iron switches). For the occasion
where it's important, the logic probe is probably better : I just find
that isn't often enough to be worth keeping one handy.

-adrian

300. Receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 13:18:04 UTC
From: matsn@jaws.nada.kth.se
Message-ID: <1993Aug2.131804.2610@kth.se>
Source record: 119916

I am posting this for a friend:

I have been looking for a description of a synthesized, general
coverage receiver without success.
Does anyone out there have a reference to such a description ?
Perhaps an article in some home-electronics magazine ?

Tnx in advance

Mats Naslund (SM3LGO/0)
email: matsn@nada.kth.se
Royal Institute of Technology
Dept of Numerical Analysis & Computing Science
Stockholm, Sweden

301. Motorola Syntor info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 15:36:07 UTC
From: hess@boi.hp.com
Message-ID: <CB5208.3pu@boi.hp.com>
Source record: 119917

I recently picked up a Motorola Syntor radio at an auction, and have purchased a repair manual for this model. While going into some theory about the operation of the radio, and its synthesizer, it does not explicitly state how to program the on-board PROM to select a specific frequency.

If you have any info on programming a 256x4 prom for use on a VHF Syntor, please mail, post, phone or courier pigeon to the address below. I have access to a prom programmer, but need the algorythm which describes how the bits in the PROM select a specific frequency.

I do have control head, cable, microphone, etc. for this unit.

Thanks much!

--
The statements/opinions expressed here are not necessarily those of the Hewlett-Packard Company. HP paid a research firm millions of dollars to get their own opinions, and has made it clear they do not wish to share mine.

Kevin C. Hess (KB7UKR) Hewlett-Packard Network Printer Division
hess@hpdmd48.boi.hp.com (208) 396-3384 Boise, Idaho 83704

Are we at last brought to such humiliating and debasing degradation, that we cannot be trusted with arms for our defense? Where is the difference between having our arms in possession and under our direction, and having them under the management of Congress? If our defense be the _real_ object of having those arms, in whose hands can they be trusted with more propriety, or equal safety to us, as in our own hands?
- Patrick Henry

302. Audio filter for headphones

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 18:04:59 UTC
From: cmoore@rose.hp.com
Message-ID: <CB58wB.G9A@icon.rose.hp.com>
Source record: 119818

Hi all,

I remember many years back (maybe 10 years ago?) seeing an article somewhere (QST? CQ? 73?) on an audio filter project for stereo headphones. The idea was to take a CW signal and run it through a lowpass filter to the left and a highpass filter to the right of the headphones. The result was that signals lower than the one you want appear to be to your left, signals higher than the one you want appear to be to your right, and the signal you're trying to copy appears to be in front of you. Has anyone seen this article, or do you know where I could get a copy?

If I can't find the article, I'd be interested in suggestions on building this from scratch. Seems like it ought to be easy enough...a couple of active filters and maybe a buffer stage or two. Probably just a quad op-amp and a few parts. But I don't have a lot of practical experience at building such things...how would I determine the correct rolloff frequencies? How do I determine how sharp the filters need to be to sound 'right'? I would guess that you'd want the filters designed such that the output from the highpass plus the output from the lowpass is approximately equal to the input signal. As the input signal changes frequency one output channel gets louder, the other gets quieter, but I think the sum would want to be about the same.

I'd appreciate any help anyone can give.

Chris Moore
N6IYS
cmoore@mothra.rose.hp.com

303. Direct Digital Synthesis in Aug 93 issue of 73

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 18:07:39 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Aug2120739@m2000.dseg.ti.com>
Source record: 119819

Folks,

There is an interesting article on freqency synthesis in the Aug issue of 73 magazine. The author develops a small freqency synthesis board using an inexpensive Harris flash D/A chip, the CA338AE (about $14 from Digikey). There is another chip in there, a Harris HSP45102 that is apparently a DDS controller chip.

My question is, does anyone know where I can buy a HSP45102 chip? What is the approximate cost?

The article suggests contacting the author to get parts, but that does seem inconvenient.

Thanks for any pointers,

-- Mike, N5QAW

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

304. Re: Audio filter for headphones

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 19:19:04 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <23jpb9INN511@newsstand.cit.cornell.edu>
Source record: 119820

In article <CB58wB.G9A@icon.rose.hp.com> Chris Moore, cmoore@rose.hp.com writes:
>If I can't find the article, I'd be interested in suggestions on building
>this from scratch. Seems like it ought to be easy enough...a couple of active
>filters and maybe a buffer stage or two. Probably just a quad op-amp and
>a few parts. But I don't have a lot of practical experience at building such
>things...how would I determine the correct rolloff frequencies? How do I
>determine how sharp the filters need to be to sound 'right'? I would guess
>that you'd want the filters designed such that the output from the highpass
>plus the output from the lowpass is approximately equal to the input signal.
>As the input signal changes frequency one output channel gets louder, the
>other gets quieter, but I think the sum would want to be about the same.

I remember that article and it really sounded neat. I always wanted to get around to doing that.

I think the crossover frequency from left to right was around 750-800 hz, the usual choice for CW pitch. I think the HP and LP sections were simple 6 db per octave filters with the corner frequencies in both cases being 750-800 hz.

I remember the author claiming that using such a setup made it much easier to separate the various signals in the passband by using 'spatial' separation - enhancing a natural ability. Sounds good to me. I wonder how it makes one feel about SSB signals. All the guys with low voices are lined up on your left, all the (X)YL's on your right? :-)

Maybe we can combine this with the phasing technique Chuck Adams was discussing earlier and get a left/right and inside/outside your head discrimination. (anybody have any good references to audio 'imaging' and how people perceive differenly phased signals and such? I find this stuff kind of facinating)

Homebrew wise, I'd expect you could do all of it with a quad op amp. I'd use 750 hz or whatever your rig gives you for a center frequency on the cw filter for the corner freq. I'd shoot for single pole 6db per octave HP and LP sections - you don't want to rolloff to where it's inaudible, you just need left/right separation.

Let us know how you make out.

73 de Kevin, WB2EMS (fkf1@cornell.edu)

305. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-02 23:31:06 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <CB5nzv.4sC@athena.cs.uga.edu>
Source record: 119822

In article <1925@arrl.org> zlau@arrl.org (Zack Lau) writes:

> Finally, there is a good reason for not using mixers if at all possible.
>They are typically the weak link in the system--they generate distortion
>products that are often objectionable. Mechanical filter and crystals
>can also cause problems, particularly when hit with too much signal. Thus,
>direct conversion and TRF systems often sound much better that more
>conventional commercial approaches.

Extremely interesting point!

What kind of detector would you use in a high-fidelity single-channel
AM receiver? Synchronous or conventional?

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

306. Re: Audio filter for headphones

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 00:52:07 UTC
From: walker@hpl-opus.hpl.hp.com
Message-ID: <104090001@hpl-opus.hpl.hp.com>
Source record: 119823

In rec.radio.amateur.homebrew, cmoore@rose.hp.com (Chris Moore) writes:

> I remember many years back (maybe 10 years ago?) seeing an article somewhere
> (QST? CQ? 73?) on an audio filter project for stereo headphones. The
> idea was to take a CW signal and run it through a lowpass filter to the
> left and a highpass filter to the right of the headphones. The result was
> that signals lower than the one you want appear to be to your left, signals
> higher than the one you want appear to be to your right, and the signal you're
> trying to copy appears to be in front of you. Has anyone seen this article,
> or do you know where I could get a copy?

This would work great over stereo loudspeakers, but would not be quite
right over headphones. For playback over speakers *amplitude* differences
turn into a phase difference due to phase cancellation from the right
and left speakers at your ears. For headphone reproduction, this
cancellation is lacking so you need to synthesize a *phase*
difference as a function of frequency to give a spatial variation to
the tones.

A suitable circuit would be a good, mono filter driving your right ear and
followed by an allpass network to drive your left ear. The phase delay
between the channels will be interpreted by your brain as a difference in
location.

--
Rick Walker
wb6gvi

307. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 02:07:41 UTC
From: alanb@sr.hp.com
Message-ID: <CB5v8t.925@srgenprp.sr.hp.com>
Source record: 119824

Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
: In article <1925@arrl.org> zlau@arrl.org (Zack Lau) writes:

: > Finally, there is a good reason for not using mixers if at all possible.
: >They are typically the weak link in the system--they generate distortion
: >products that are often objectionable. Mechanical filter and crystals
: >can also cause problems, particularly when hit with too much signal. Thus,
: >direct conversion and TRF systems often sound much better that more
: >conventional commercial approaches.

: Extremely interesting point!

: What kind of detector would you use in a high-fidelity single-channel
: AM receiver? Synchronous or conventional?

Synchronous detectors have much lower distortion than diode detectors.
They also reduce the distortion caused by selective fading. However, they
are more complicated and harder to get working right.

AL N1AL

308. DTMF decoder for PC?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 04:09:41 UTC
From: rbook@owlnet.rice.edu
Message-ID: <CB60w6.G1w@rice.edu>
Source record: 119825

Does anyone know how to make a device to decode DTMF (touch-tone) codes for a PC? The idea would be to connect the audio to this device, have it decode the tones, and feed the resulting numbers to the PC through a serial (or parallel?) port. This way I could control my PC via telephone or HT.

--Robert Book KD6NRI
rbook@rice.edu

309. Looking for a synt chip for a 10M HT.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 11:33:52 UTC
From: bdonal@elaine.ee.und.ac.za
Message-ID: <bdonal.223.0@elaine.ee.und.ac.za>
Source record: 119827

Hi,

I am trying to find a synthesiser chip that will work at 10M and
below, so that I can upgrade my crystal tuned rig. I guess there are a
number of parts that will fit the bill, but which is most common/easy to use.

Any pointers would be great.

Thanks, Brian

_____ _____
Brian. |//////\ |//////\ /___/\
|//|)//| |//| |//| | |
|//////< |//| |//| _ * * _
|//|)//| |//|_|//| - /_\ -
|/////// # |/////// # ---

Email: bdonal@elaine.ee.und.ac.za
Fax: (27) 31-8162111

310. Tone decoder chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 13:45:14 UTC
From: bennett@keylime.cis.ufl.edu
Message-ID: <23lq5aINNdo1@snoopy.cis.ufl.edu>
Source record: 119826

I am presently designing a tone decoder and am looking for information on a suitable chip to use. I am aware of the 567 tone decoder, however the design is rather old. I am hoping that a later, better chip is available. Any information on available chip types is desirable.

Thanks much

Paul R. Bennett N4EGO/AG (tested 04/17/93 And STILL waiting)
Senior Electronics Technician/U of Fl CIS dept
bennett@cis.ufl.edu

311. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 14:30:26 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug3.143026.4891@ke4zv.uucp>
Source record: 119828

In article <1925@arrl.org> zlau@arrl.org (Zack Lau) writes:
>
> Yes, amplifiers can certainly become oscillators. However, many
>amateur stations generate a -10 dBm signal that becomes a +60 dBm signal,
>all on the same frequency! Thus, it certainly is possible to get 70
>dB of gain on one frequency. Since tuned radio frequency receivers use
>two frequency bands (audio and RF), getting 140 dB of gain out of a TRF
>is certainly feasible. By going to 3 frequency bands, (audio, IF, and
>RF), you can have a receiver that has very little shielding--just a good
>layout. This is quite important to a manufacturer who wants to make
>millions of cheap receivers at a competitive price.

Or amateurs with less than optimum construction skills. It's certainly
easier to tame a system that starts with internally generated drive at
-10 dbm than one that starts with external signals at -120 dbm for most
constructors. Keeping the feedback leakage that low can be a challenge.
It's certainly not impossible, as TRF receivers of the past demonstrate.

> Finally, there is a good reason for not using mixers if at all possible.
>They are typically the weak link in the system--they generate distortion
>products that are often objectionable. Mechanical filter and crystals
>can also cause problems, particularly when hit with too much signal. Thus,
>direct conversion and TRF systems often sound much better that more
>conventional commercial approaches.

They can indeed. I think that taming these beasts can be much more
of a challenge than with a superhet, however. Many DC receivers,
where all the gain is at audio frequencies, have stability problems,
and hum and noise pickup problems, not to mention image problems.
Still, some perform remarkably well. And old TRF receivers were
incredibly touchy to tune, easily breaking into oscillation with
the wrong combination of settings. Even the wind blowing the antenna
would often trigger them into oscillation. A TRF built for a single
frequency might perform well if constructed well, but it wouldn't be
my first choice due to the numerous chances for problems.

I've listened to old TRF radios and been amazed at their clarity compared
to superhets of the same vintage, but they don't have AGC, and the tubes
of the day were more non-linear than any of the circuits used in modern
superhets, and the shape factor of their LC networks doesn't compare to
that of modern crystal or mechanical filters. All but the latter might be
alleivated in a modern design. Perhaps even the shape factor could be
improved with proper stagger tuning on a fixed frequency receiver. It
might be an interesting challenge to build a modern TRF, but if I wanted
a practical receiver, I'd likely stay with a superhet.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

312. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 14:41:43 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug3.144143.5113@ke4zv.uucp>
Source record: 119831

In article <CB5v8t.925@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
>
>: What kind of detector would you use in a high-fidelity single-channel
>: AM receiver? Synchronous or conventional?
>
>Synchronous detectors have much lower distortion than diode detectors.
>They also reduce the distortion caused by selective fading. However, they
>are more complicated and harder to get working right.

However, they have a threshold. For DXing a weak AM station, a diode detector, or using pseudo-sync detection of a single sideband will give less distortion. If the signal is moderately strong, the sync detector wins hands down.

The reason for the threshold is that as the signal becomes weaker, the sync lock becomes noisy due to disturbances from random channel noise. This causes phase jitter that creates distortion. Because of the way a sync detector works, this distortion is 2X that of a diode detector under the same conditions.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

313. Re: Audio filter for headphones

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 14:43:35 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <23ltinINNr3b@newsstand.cit.cornell.edu>
Source record: 119829

In article <104090001@hpl-opus.hpl.hp.com> Rick Walker,
walker@hpl-opus.hpl.hp.com writes:
>This would work great over stereo loudspeakers, but would not be quite
>right over headphones. For playback over speakers *amplitude*
differences
>turn into a phase difference due to phase cancellation from the right
>and left speakers at your ears. For headphone reproduction, this
>cancellation is lacking so you need to synthesize a *phase*
>difference as a function of frequency to give a spatial variation to
>the tones.

Hmmm - this might be true, but I don't remember the article doing that.
What I remember was just a pair of mirror image filters around the center
frequency - as I described. And I'm pretty sure the author used them with
headphones - not speakers.

>
>A suitable circuit would be a good, mono filter driving your right ear
and
>followed by an allpass network to drive your left ear. The phase delay
>between the channels will be interpreted by your brain as a difference in
>location.
>
>--
>Rick Walker
>wb6gvi

So how do you get the signals to change from left to right as the tone
changes. I can see how you could get a fixed phase difference with the
allpass network, but what the system wants is a change in relative signal
to left and right ear dependent on frequency. Maybe we are working at two
different things here.

Anybody remember what magazine the article was in? We've got a fair
collection for QST and 73 in the university libraries - maybe I can go
spelunking at lunch. Even a rough idea of the year (or decade) would
help. I'm thinking late 70's maybe.

73 de Kevin, WB2EMS (fkf1@cornell.edu)

314. Re: What equipment to tune up a Ramsey 146?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 14:51:06 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug3.145106.5217@ke4zv.uucp>
Source record: 119832

In article <25277@acorn.co.uk> agodwin@acorn.co.uk (Adrian Godwin) writes:
>In article <1993Jul30.141531.16626@ke4zv.uucp> gary@ke4zv.UUCP (Gary Coffman) writes:
>>
>>I use them mainly to check component gates when troubleshooting
>>equipment that *once* worked. Trying to debug a design is a different
>>problem. Ideally, I'd have a current probe instead of a logic probe.
>>HP used to make one, but I haven't found one lately, and HP wanted
>>too much money. The current probe is a great aid when you have a
>>hammered line. It can tell you if the problem is a shorted output
>>or input without having to cut traces.
>>
>
>I'd like to play with one of these - am I right in thinking they use a
>magnetic, rather than a voltage pickup ? If so, there might be a problem
>in finding the right signal on modern boards with closely spaced tracks.
>However, it looks like an interesting homebrew project - maybe using
>a pickup based on a junked floppy disc drive head ?

Yes, they are pickups dependent on the magnetic field generated by
the current flow. A floppy head might work fine for *pulses*, but
I think Hall effect sensors are used in commercial probes. Since
you want to read DC currents as well as AC, an inductive pickup
won't work.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

315. Re: Direct Digital Synthesis in Aug 93 issue of 73

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 14:55:09 UTC
From: mb@wpsun4.UUCP
Message-ID: <828@wpsun4.UUCP>
Source record: 119833

linnig@m2000.dseg.ti.com (Mike Linnig) writes:
:
: My question is, does anyone know where I can buy a HSP45102 chip? What is
: the approximate cost?

I ordered the HSP45102 and accompanying DAC from Wyle last week. As I recall, the DDS chip was about $25, and the DAC was just under $20. I ordered two of each to be able to get quadrature output for an R2/T2 phasing SSB receiver/ transmitter that I'll be building next. I haven't found a source (besides the author) for the Coilcraft filter mentioned in the article.

Michael Bendio (mb@titan.wordperfect.com)

316. Re: How do TDR's work

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-03 15:33:12 UTC
From: jmhill@duck.WPI.EDU
Message-ID: <23m0fo$os5@bigboote.WPI.EDU>
Source record: 119830

I guess I missed the original note, sorry;
TEKTRONIXS has a neat TDR that is basically a stand alone unit, it even plots out a graph of the cable characteristic, its an analog unit. The unit has a set of switches for selecting the correct cable impedance, and a set of switches for selecting the velecity factor. Unfortuenately it seems that ANY nice lab gear is out of the budget of most hams. The basic idea is simple, transmit a pulse into the cable that is relatively short in comparison to the time it takes for the signal to take a round trip down the cable and back. At the same time monitor the voltage at the same end of the cable. Any discontinuties in the cable cause refelctions that
you will, "see" while you monitor the cable end.
If you have an oscilloscope and a function generator that are both fairly fast, try it yourself. Get your hand calculator out so that you can convert the time you see on the scope to distance. If you start with a known length of cable, you can calculate the velocity factor. Make sure to terminate the end of the cable you are working with, 50 ohms for RG58 or RG8, you don't want to
re-reflect the signals that come back to you.
Jonathan KA1WZN

317. Acquiring Crystal Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 00:39:20 UTC
From: kirkland@nimios.eng.mcmaster.ca
Message-ID: <1993Aug3.234459.1135@mcshub.dcss.mcmaster.ca>
Source record: 119834

Does anyone out know of suppliers for crystal filters (i.e. single quantities)
for 9 - 10 MHz IF and 40 MHz IF or higher?

Thanks Bill Kirkland

reply to kirkland@comres3.Eng.McMaster.CA

318. Re: Audio filter for headphones

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 01:51:45 UTC
From: walker@hpl-opus.hpl.hp.com
Message-ID: <104090002@hpl-opus.hpl.hp.com>
Source record: 119835

In rec.radio.amateur.homebrew, F. Kevin Feeney <fkf1@cornell.edu> writes:

> So how do you get the signals to change from left to right as the tone
> changes. I can see how you could get a fixed phase difference with the
> allpass network, but what the system wants is a change in relative signal
^^^^^^^^^^^^^^^^^^^^^^^^^^
> to left and right ear dependent on frequency. Maybe we are working at two
> different things here.

To simulate what the ear hears when you move a source from right to left
you don't want to make a relative signal strength change. You need to
make a phase change. This confusion comes from the fact that to make
a phase change with stereo speakers, you need to make an amplitude change
between the speakers. This is *not* true for headphone reproduction.

To see why this is, you can analyze what the ear hears in the following
experiment:

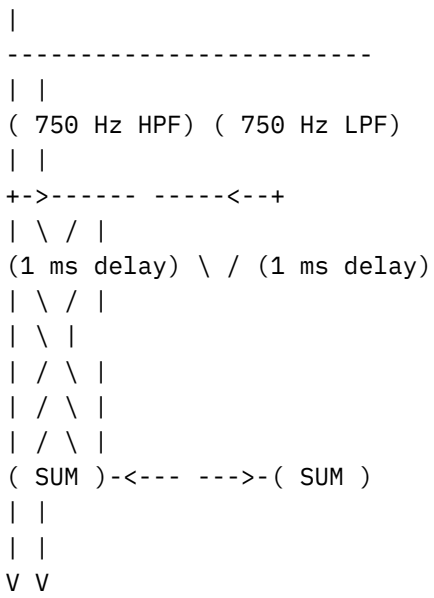
```
(*) sound source
|\
| \
| \
| \
| \
(L) (R) Right ear signal is delayed from Left ear signal
```

```
(*) sound source
/\
/ \
/ \
(L) (R) No phase lag between signals at each ear
```

Notice that the amplitude stays constant and the phase varies when
the source is moved from left to right. Also, at any given position,
their is a fixed *time delay* difference between the ears giving a
phase shift which is frequency dependant.

One way to achieve this is to simulate the paths in a stereo speaker
system. (If you draw out the paths from the L/R speakers to the ears,
you can verify that amplitude changes in the stereo speakers will convert
to the proper *phase* variations at each ear - for details, look up the
original patent on stereo by Blumlein)

```
(Mono Source)
|
|
(500Hz - 1KHZ BPF)
```



You can achieve the 1 ms delay with op-amp all-pass sections, or with
Reticon bucket brigade delay lines. "1ms" is chosen to approximate
the time delay between ears.

I've built this network (without the HP and LPFs) so that I could listen
to conventional stereo and have it sound right over headphones. It's
fun to dial the delay and have the apparent acoustic location of
the speakers move around.

I think you need to do something equivalent to the above if
you want to really make a stereo sound stage with the low frequencies
on the left and the high frequencies on the right. It may be that
the original simple technique approximates the above "correct" behavior
over a small band about the filter crossover frequency. With a narrow
passband, this may be good enough.

A really "fancy" version of this circuit would include filters in
the direct and crossfeed paths to simulate the variation in frequency
response of the ear as a function of angle.

--
Rick Walker
WB6GVI

319. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 06:35:15 UTC
From: zlau@arrl.org
Message-ID: <1954@arrl.org>
Source record: 119838

In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>In article <1925@arrl.org> zlau@arrl.org (Zack Lau) writes:
>>
>> Yes, amplifiers can certainly become oscillators. However, many
>>amateur stations generate a -10 dBm signal that becomes a +60 dBm signal,
>>all on the same frequency! Thus, it certainly is possible to get 70
>>dB of gain on one frequency. Since tuned radio frequency receivers use
>>two frequency bands (audio and RF), getting 140 dB of gain out of a TRF
>>is certainly feasible. By going to 3 frequency bands, (audio, IF, and
>>RF), you can have a receiver that has very little shielding--just a good
>>layout. This is quite important to a manufacturer who wants to make
>>millions of cheap receivers at a competitive price.
>
>Or amateurs with less than optimum construction skills. It's certainly
>easier to tame a system that starts with internally generated drive at
>-10 dbm than one that starts with external signals at -120 dbm for most
>constructors. Keeping the feedback leakage that low can be a challenge.

Not in my experience. Receivers are usually much easier to build than
transmitters that have a -10 dBm low level signal, despite the much
higher gain. The difficulty with transmitters is that you have to watch
the grounding much more carefully--high current flowing on a "ground" plane
can do nasty things to low level circuits. Receivers rarely have high
current circuits except at audio. Yes, some high performance receivers
have high bias currents, but these are static currents that really don't
disrupt other circuits. Perhaps this is the reason you see more published
CW than SSB transmitters--you can start off with +10 dBm on CW, which means
a 10 watt transmitter may have only 30 dB of gain. Published SSB
transmitters are actually quite rare--once every couple years is the norm.

>It's certainly not impossible, as TRF receivers of the past demonstrate.
>
>> Finally, there is a good reason for not using mixers if at all possible.
>>They are typically the weak link in the system--they generate distortion
>>products that are often objectionable. Mechanical filter and crystals
>>can also cause problems, particularly when hit with too much signal. Thus,
>>direct conversion and TRF systems often sound much better that more
>>conventional commercial approaches.

It might be interesting to do a DSP receiver with a TRF front end
when the technology gets cheap enough for your budget. It ought to be
possible to to an "intelligent" detector, one that can detect interference
on one sideband and switch to the other. The band limited signal
provided by the front end greatly eases the requirements of the A/D
converter greatly. One of these days I'll have to dust of my textbooks

on DSP/digital design. I actually have a photocopied book that is
completely legal--the visiting MIT professor ran off a few copies of a
computer vision textbook he was working on :-).

>
>They can indeed. I think that taming these beasts can be much more
>of a challenge than with a superhet, however. Many DC receivers,
>where all the gain is at audio frequencies, have stability problems,
>and hum and noise pickup problems, not to mention image problems.
>Still, some perform remarkably well. And old TRF receivers were

Or, you could use intelligent design. If you use the balanced output
of an NE602 to drive a balanced amplifier (properly wired up OP AMP),
the hum and noise problems go away. The image can certainly be a
problem, particulary if you have CW stations every 200 Hz. Of course,
this means that well over 250 stations are stuffed into 50 kHz. But,
when things aren't as busy, you can offset the receiver a little,
which makes the pitch of the desired station go one way and that of
the inteference the other. The single board transceiver in the ARRL
Handbook allows this.

>incredibly touchy to tune, easily breaking into oscillation with
>the wrong combination of settings. Even the wind blowing the antenna
>would often trigger them into oscillation. A TRF built for a single
>frequency might perform well if constructed well, but it wouldn't be
>my first choice due to the numerous chances for problems.

>
>I've listened to old TRF radios and been amazed at their clarity compared
>to superhets of the same vintage, but they don't have AGC, and the tubes
>of the day were more non-linear than any of the circuits used in modern
>superhets, and the shape factor of their LC networks doesn't compare to
>that of modern crystal or mechanical filters. All but the latter might be
>alleivated in a modern design. Perhaps even the shape factor could be
>improved with proper stagger tuning on a fixed frequency receiver. It

Yes, even shape factor can be improved to match that of a crystal
factor, though probably not if you are trying to use the concept of
stagger tuning when doing the design.

I'd get a copy of Zverev's Handbook of Filter Synthesis, which has
tables for designing fancy filters like approximate Gaussian filters.
There probably is some shareware program that will do the design,
but I'm not aware of it.

The disadvantage of LC filters is that the Q of inductors is much
lower, so that you have to do the filtering at much lower frequencies
to get as narrow a bandwidth. On the other hand, crystals are series
resonant circuits with a stray parallel capacitance, which isn't
exactly the easiest component to deal with. If the Q is high enough,
you can get any shape factor you can get with crystals, provided
you use enough resonant circuits.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

>might be an interesting challenge to build a modern TRF, but if I wanted
>a practical receiver, I'd likely stay with a superhet.

320. Prescaler 10/11 needed ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 13:08:19 UTC
From: stkaba@uta.fi
Message-ID: <23occ3$346@vuokko.uta.fi>
Source record: 119836

Hi, I have tried to find either Motorola or Plessey 10/11
prescaler for under 200Mhz operation, but they seem to be hard to
get at low quantities.
Now, does anybody have such one in the junkbox and willing to
sell it ?.

73 kari

--

Kari Back E-mail stkaba@uta.fi
Riistakatu 3 Tel. 358-31-534661
33520 Tampere, Finland
---

321. Re: Acquiring Crystal Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 13:37:08 UTC
From: rick@cs.sunysb.edu
Message-ID: <23oe25$1b0@newsserv.cs.sunysb.edu>
Source record: 119839

Bill Kirkland (kirkland@nimios.eng.mcmaster.ca) wrote:
: Does anyone out know of suppliers for crystal filters (i.e. single quantities)
: for 9 - 10 MHz IF and 40 MHz IF or higher?

: Thanks Bill Kirkland

Digikey sells 10.7 mHz crystal filters (2/4 pole) - see the July-Aug '93
catalog pg 119. I spent 2 weeks digging around for 45 mHz crystal
filters a few months ago: bottom line is that, outside of Japan, they are
basically either unavailable in < 100 quantity, or "made to order" and
very expensive. If loss is not a factor, and price is no object, you can
get SAW filters from Sawtek or Andersen pretty easily..

: reply to kirkland@comres3.Eng.McMaster.CA

Rick Spanbauer, WB2CFV
SUNY/Stony Brook

322. Re: PUFF?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 15:33:06 UTC
From: mb@wpsun4.UUCP
Message-ID: <834@wpsun4.UUCP>
Source record: 119837

beyer@athena.uto.dec.com (Peter Beyer) writes:
:
: In article <careyj.743980901@spot.Colorado.EDU>, careyj@spot.Colorado.EDU (CAREY JOSEPH M) writes:
:
: |>My guess is 2.0 is the last version we're gonna see. I think it
: |>is three years old now. Written by grad students at Cal-Tech, I think
: |>they all granulated and went on to new projects.
:
: That's too bad. I use PUFF from the very beginning and still, I'am very pleased
: with it, though as said before, it's missing some important aspects. Commercial
: packages like Touchstone and SuperCompact are expensive, out of reach for
: the every Ham. If the items I mentioned were included it would be real
: competitive.
:

I just tuned in to this newsgroup, and missed the beginning of this thread. I've checked Archie unsuccessfully for PUFF. Can anyone tell me where I can find it?

Thanks much!
Michael Bendio, WT7J (mb@titan.wordperfect.com)

323. Crystal Replacer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 17:15:14 UTC
From: bills@inqmind.bison.mb.ca
Message-ID: <4RPR8B5w165w@inqmind.bison.mb.ca>
Source record: 119844

I have here a "Channelizer" dating back to the late '70s; its an outboard frequency synthesizer that was used to convert crystal-controlled VHF gear to multiple channel operation. Looking at the internals of the unit, it looks like it could all be replaced with one or two modern chips, which would make it small enough to fit inside some of those old-time radios. Is anyone aware of a source of either a kit or an article describing the construction of such a thing ? I'd like to get something that would let me pick a few channels and select them from the front panel; right now my skills aren't quite up to programming a 68HC11 and MC145170 combination for this job.
Bill VE4STW

bills@inqmind.bison.mb.ca

324. Re: What do YOU shop for?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-04 21:19:19 UTC
From: tonyz@hpwrce.mayfield.hp.com
Message-ID: <104730002@hpwrce.mayfield.hp.com>
Source record: 119858

More Beer.

325. Source for Feeny's filter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 00:05:48 UTC
From: kevin@bfa.aquilagroup.com
Message-ID: <9308050004.AA08070@bfa.aquilagroup.com>
Source record: 119840

This posting is an answer to Kevin Feeny's request re: spacial perception CW filter. It is a new posting as my mail reader has a problem where I can't continue a thread, or post directly. I'm posting via email to a host which (hopefully) will post this under my name.

The filter Feeny asks about is discribed in 1981 ARRL HANDBOOK pp 8_50-54. ARRL did not mention the author or QST publication dates in this vintage of handbook

The filter uses 6th order (two cascaded 3rd order Butterworths) filters, A HP on the right ear, and a LP on the left. The article gives the 3 dB points for the two 3rd order sections in cascade, as 583 Hz for the LP and 840 Hz for the HP. The responses cross at 700 Hz which is the -6dB point for both filters.

I smelled a rat when I saw the two cascaded 3rd order sections, So I calculated the transfer function of one of the LP sections. It has Butterworth(well, within component tolerances, anyway) pole configuration, with the break frequency at ~736 Hz. The reason for my suspicion was the fact that two 3rd order sections in cascade can never give a Butterworth, Chebyshev, elliptical, or otherwise optimized 6th order response. The third order sections mandate the inclusion of two real poles, thus severly rounding the "corner" of the response. I suspect that this is why the curves cross at the -6dB point instead of the -3dB point which would have been the obvious thing to do. At the -3dB point the filter responses are still rather flat due to the choice of pole placement.

Heres how I will try to do it:
I will build true 6th order butterworth filters with all poles at 700 Hz. This will put the combined (HP+LP) response 3 dB above the skirts, unless I blow the phasing which would give a deep notch there. (this is the reason all _good_ loudspeaker crossover networks are odd-ordered) (OK golden ears, when you flame, remember I said _good_ not expensive, which in the fantasy land of audiophila rarely corilates)

Here is my $.02 WRT the phase vs. amplitude discussion in the other thread: People who measure such things have pegged the bandwidth of the human nervous system at around 10 Hz. This means that there is no physical mechanism whereby we can directly sense the phase of an audio signal.

Yes, ears respond to sound well above that 10 Hz, not to mention the frequency of light to whichour eyes are sensitive. In the case of the ear, the sound produces a sypathetic vibration in one or more of the tuned "reeds" in the cocula(sp?). The nerve cells respond to the _amplitude_ of this vibration, and tell the brain how loud that sound is. The nervous system hasn't the speed to tell the brain "now the pressure is rising,

now it's falling" as would be required to convey phase information.

This is not to say that phasing does not matter. In the case of stereo loudspeakers, the phasing produces standing waves (OK, they only stand as long as a given note lasts) which result in _amplitude_ differences at the sides of your head. Thus we do _indirectly_ sense the relitive phasing of two sources. Due to the less than perfect L-R channel isolation inside the skull, it is probable that some standing waves happen in there, which would allow some sensitivity to phasing while wearing headphones. As for the assertion that it is the phase difference betwixt the two ears which allows us to locate a single point source.. hogwash! Each ear has a directional pattern which has a peak about 45 degrees to the associated side. Thus when a sound arrives from one side it has a higher _amplitude_ on that side. The "horn antennas" (those flaps of skin on the side of my head) lose their directivity at low frequencys, allowing the sub-woofers to be placed wherever it's most convienient. Still not convinced? OK, a 10 Khz sound has a a wavelength of around 1 inch. Thus as the head is turned 90 degrees, the relitive phasing will change by roughly 720 degrees. Yet the direction to the sound can be accuratly sensed through the whole turn. I hope no ham is silly enough to suggest that it is possible to tell the difference between 90 deg phasing and 450 deg phasing: it just don't matter! Oh, if you conduct this test, do it outdoors or in an anechoic chamber: any reflective walls will make it nearly impossible to tell the direction, since the ears will pass through standing waves as the head is turned, resulting in wild variations in _amplitude_ .

To observe how much we rely on _amplitude_ differences, put on a pair of stereo 'phones, close your eyes, stand on one foot, and see how long you can keep your balance while your wife works the balance control back and forth.

The "delay and sum" schemes mimic the amplitude variations which occur when music from two sources is summed accusticly. The better ones reduce the amplitude of the delayed signals to mimic the directivity of the ear. It is the amplitude variations resulting from the summing process which produce the directional effects, not the phasing at all.

Sorry to run on like that, but the pseudo scientific hyperbole used to extract huge sums of money from self-styled "audiophiles" is one of my pet peaves. e.g. if an amplifier inverts, and you think it matters (it doesn't) then for crying out loud, reverse the damned speaker leads already!

So to get down from my high horse:

Kevin, If you can't find the '81 handbook then let me know. I'll be happy to copy the article, and send it to you for the cost of a SASE. If you got my earlier e-mail on this subject, note the minor changes here, as I was going from memory then, but have the handbook in front of me now.

-73-

Kevin KO0B (BAD in callbook) kevin@aquilagroup.com

-My employer shares my opinions..NOT!

326. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 01:08:47 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug5.010847.15801@ke4zv.uucp>
Source record: 119841

In article <1954@arrl.org> zlau@arrl.org (Zack Lau) writes:
>
>Not in my experience. Receivers are usually much easier to build than
>transmitters that have a -10 dBm low level signal, despite the much
>higher gain. The difficulty with transmitters is that you have to watch
>the grounding much more carefully--high current flowing on a "ground" plane
>can do nasty things to low level circuits. Receivers rarely have high
>current circuits except at audio. Yes, some high performance receivers
>have high bias currents, but these are static currents that really don't
>disrupt other circuits. Perhaps this is the reason you see more published
>CW than SSB transmitters--you can start off with +10 dBm on CW, which means
>a 10 watt transmitter may have only 30 dB of gain. Published SSB
>transmitters are actually quite rare--once every couple years is the norm.

Hmmm. Good point. Maybe that's why I like modular construction, it
isolates those high ground currents. Of course it can cause other
problems. :-(

>It might be interesting to do a DSP receiver with a TRF front end
>when the technology gets cheap enough for your budget. It ought to be
>possible to to an "intelligent" detector, one that can detect interference
>on one sideband and switch to the other. The band limited signal
>provided by the front end greatly eases the requirements of the A/D
>converter greatly. One of these days I'll have to dust of my textbooks
>on DSP/digital design. I actually have a photocopied book that is
>completely legal--the visiting MIT professor ran off a few copies of a
>computer vision textbook he was working on :-).

I suspect we'll see DSP as IF replacement rather than as a TRF stage
follower because it pushes DSP frequency limits less and makes the
software simpler. I'm looking forward to it, however, it does make
building detectors with the keyboard possible.

>Yes, even shape factor can be improved to match that of a crystal
>factor, though probably not if you are trying to use the concept of
>stagger tuning when doing the design.

>The disadvantage of LC filters is that the Q of inductors is much
>lower, so that you have to do the filtering at much lower frequencies
>to get as narrow a bandwidth. On the other hand, crystals are series
>resonant circuits with a stray parallel capacitance, which isn't
>exactly the easiest component to deal with. If the Q is high enough,
>you can get any shape factor you can get with crystals, provided
>you use enough resonant circuits.

There's the rub, LC filters with narrow bandwidths and good shape are hard except at low frequencies. I assume by low you're probably talking 85 kHz or so like certain older commercial equipment used. That's not much use to a TRF design unless you're building a VLF recevier.

I suggested the expedient of stagger tuning because the insertion loss of high order LC filters can be quite high, the design is already requiring a lot of gain on frequency, and the problem is likely one of too narrow a peaked response rather than too broad. Stagger tuning is a venerable technique for broadening a very peaked response in a high gain amplifier.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

327. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 06:02:13 UTC
From: zlau@arrl.org
Message-ID: <1975@arrl.org>
Source record: 119849

In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>In article <1954@arrl.org> zlau@arrl.org (Zack Lau) writes:
>
>>It might be interesting to do a DSP receiver with a TRF front end
>>when the technology gets cheap enough for your budget. It ought to be
>>possible to to an "intelligent" detector, one that can detect interference
>>on one sideband and switch to the other. The band limited signal
>>provided by the front end greatly eases the requirements of the A/D
>>converter greatly. One of these days I'll have to dust of my textbooks
>>on DSP/digital design. I actually have a photocopied book that is
>>completely legal--the visiting MIT professor ran off a few copies of a
>>computer vision textbook he was working on :-).
>
>I suspect we'll see DSP as IF replacement rather than as a TRF stage
>follower because it pushes DSP frequency limits less and makes the
>software simpler. I'm looking forward to it, however, it does make
>building detectors with the keyboard possible.

Not a whole lot less, as undersampling is feasible with the band limited
TRF receiver. You turn the aliasing problem around into an *advantage*

>>Yes, even shape factor can be improved to match that of a crystal
>>factor, though probably not if you are trying to use the concept of
>>stagger tuning when doing the design.
>
>>The disadvantage of LC filters is that the Q of inductors is much
>>lower, so that you have to do the filtering at much lower frequencies
>>to get as narrow a bandwidth. On the other hand, crystals are series
>>resonant circuits with a stray parallel capacitance, which isn't
>>exactly the easiest component to deal with. If the Q is high enough,
>>you can get any shape factor you can get with crystals, provided
>>you use enough resonant circuits.
>
>There's the rub, LC filters with narrow bandwidths and good shape
>are hard except at low frequencies. I assume by low you're probably
>talking 85 kHz or so like certain older commercial equipment used.
>That's not much use to a TRF design unless you're building a VLF
>recevier.

Why not a 1.1 MHz LC filter for a high performance AM receiver?
After all, people used to spend good money to have radios the size
of a Collins 75A-4 receiver. You could probably cascade two
6 pole filters and have plenty of room left over for the rest
of the receiver.

Also, you might not want such a tight filter in front of your DSP hardware. A 200 kHz wide 10 MHz filter might actually make more sense, so you can better analyze band conditions. Thus, LC filters might make a lot of sense in high performance wideband superhetrodyne receivers. Of course, you probably want to stick with a narrow crystal filter for the few kHz you want to listen to.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

328. Looking for SSB-chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 08:28:02 UTC
From: vreeburg@fys.ruu.nl
Message-ID: <1993Aug5.082802.8402@fys.ruu.nl>
Source record: 119842

Hi there,

I'm looking for a single chip which is able of
single-sideband-modulation. Not that I want to build my own transmitter,
but I want to do a frequency shift of an audio signal by applying the
audio signal and a 100Hz 'carrier' signal to this SSB-chip. The output
signal, as far as I know, will be: audio + 100Hz.

Could someone point me to any manufacturor of such a chip.

Thanks.

--
Jurriaan Vreeburg email: vreeburg@fys.ruu.nl
Department of Physics and Astronomy tel.: (+31)-(0)30-534566
P.O. Box 80.000
3508 TA Utrecht Holland

329. Dolby Pro-Logig decoding chip type numbers wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 12:05:25 UTC
From: bauer@ims-tc.ce.philips.nl
Message-ID: <1993Aug5.120525.27106@philce.ce.philips.nl>
Source record: 119843

Hello fellow electronic enthousiasts.

Finally a newsgroup that gives me new hope on my way to finding Dolby
Pro-Logic decoding chip type numbers, preferably working in the analog
domain. I am planning to build a Pro-Logic decoder with adjustable line-
out only. As I have no chip number yet, anything is welcome, even digital
one's although they will probably require more effort to bring to life.

Also options for digital delay, preferably with onboard AD-DA conversion
working in the audio frequency range up to 15KHz.
I know there are many commercial Pro-Logic products out there, but they
come packed with a tuner and power amps. I don't need that, because I have
that already, besides that, their sound quality is poor.
So I know there MUST be some decoding chips out there. For me it is easy
to order them as a SONY, KENWOOD or say any other brand as a spare part,
so numbers from chips used in commercial products are also welcome.
ANYTHING IS WELCOME.

As I find audio quality very important (high-end, sort of), please say
something regarding this aspect if possible.
Ideal would be a pure analog decoding chip with onboard 'Dolby B' kind of equalisation for the rear channel, having an option for (auto) input channel balancing, and giving high channel separation (35dB is high in this respect), and another chip for the 20ms delay. All of wich I add a ALPS potmeter to plus output buffers of high quality. High quality is an issue of the entire decoder.

Last question, do you have any suggestions for other groups to post this
questing in?

MANY MANY THANKS,

Reinier Bauer
PHILIPS Interactive Media Systems
Eindhoven, The Netherlands
E-Mail : bauer@ims-tc.ce.philips.nl

330. Re: Looking for SSB-chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 13:36:30 UTC
From: vreeburg@fys.ruu.nl
Message-ID: <1993Aug5.133630.27647@fys.ruu.nl>
Source record: 119845

In <1993Aug5.082802.8402@fys.ruu.nl> I write:

>Hi there,

>I'm looking for a single chip which is able of
>single-sideband-modulation. Not that I want to build my own transmitter,
>but I want to do a frequency shift of an audio signal by applying the
>audio signal and a 100Hz 'carrier' signal to this SSB-chip. The output
>signal, as far as I know, will be: audio + 100Hz.

>Could someone point me to any manufacturor of such a chip.

Someone (I will not bring up is name here) replied to me that I had to
be more specific about what I want to do with the chip:

I want to do a frequnecy-shift of an audio signal. The frequency shift
should be absolute. So if I shift 1kHz it should become 1.1kHz and if I
shift 2kHz, it should become 2.1kHz.
Maybe, someone has any other idea's which I can use to build some device
that can shift up or down, but I thought I could use an SSB-modulating chip.

>Thanks.
Thanks again for your attention.

--
Jurriaan Vreeburg email: vreeburg@fys.ruu.nl
Department of Physics and Astronomy tel.: (+31)-(0)30-534566
P.O. Box 80.000
3508 TA Utrecht Holland

331. Re: Crystal Filter Availability

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 14:14:09 UTC
From: epacyna@auratek.COM
Message-ID: <1145@auratek.COM>
Source record: 119848

Following are two sources for 9Mhz filters:

Oak Hills Research
20879 Madison St.
Big Rapids, MI 49307

6 pole
9Mhz center frequency
6dB BW is 2.4Khz
Stopband Atten > 60dB
Insertion loss of 6 dB
Input/Output Z is 500 ohms
Price $29.95 or 2 for $50

Also Radio Kit in Pelham NH is still around (although they are not as active as in years past). They also have a similar filter as above and USB/LSB offset crystals.

73

Ed W1AAZ

332. Homebuilt discone antenna info needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 14:28:38 UTC
From: weed@pat.mdc.com
Message-ID: <1993Aug5.142838.28570@aio.jsc.nasa.gov>
Source record: 119846

--
I plan on home-building a discone antenna for my scanner. Having
blown all my extra cash on the scanner, I can't affort the 60-90 dollars
for a factory antenna. I plan to put the antenna in my attic, so
I'm not so concerned with weather durability.

I understand the basic dimensions, but I need help on the following:

* How critical is getting the disk lined up with the apex of
the cone?
* I plan to use the so-259 chassis mount connector from RS, but
how do I connect the ground to the cone and the center to the
disk? In other words, how do I connect everything at point F:

A

```
-----------
|
B/|F|\C
/ | | \
/ | \
/ so239 \
/ feed \
/ \
/ \
D/ \E
```

* How does the antenna maintain its structural integrety? Do I
need to build a wood frame to hold it all together? How critical
is it that the cone be perfectly round?
* I plan to use 1/2 inch galvanized screen for both the cone and
the disk since I have some lying around. Is this acceptible?

Thanks in advance for your help,

-- Dan

Daniel Weed weed@pat.mdc.com
"My comments are my own, not my employer's"

333. Re: Acquiring Crystal Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 15:07:18 UTC
From: rtaylor@ux1.cso.uiuc.edu
Message-ID: <23r7n6$aca@vixen.cso.uiuc.edu>
Source record: 119847

kirkland@nimios.eng.mcmaster.ca (Bill Kirkland) writes:

>Does anyone out know of suppliers for crystal filters (i.e. single quantities)
>for 9 - 10 MHz IF and 40 MHz IF or higher?

> Thanks Bill Kirkland

I have an unused McCoy Golden Guardian 9MHz (one of the best ever bulit)crystal filter with the matching USB/LSB crystals I will sell for $49.

334. Re: Crystal Replacer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 19:32:00 UTC
From: wa2sff@cbnewsh.cb.att.com
Message-ID: <CBAwxE.BG8@cbnewsh.cb.att.com>
Source record: 119853

In article <4RPR8B5w165w@inqmind.bison.mb.ca>, bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
> I have here a "Channelizer" dating back to the late '70s; its an
> outboard frequency synthesizer that was used to convert
> crystal-controlled VHF gear to multiple channel operation. Looking at the
> internals of the unit, it looks like it could all be replaced with one
> or two modern chips, which would make it small enough to fit
> inside some of those old-time radios. Is anyone aware of a source of
> either a kit or an article describing the construction of such a
> thing ? I'd like to get something that would let me pick a few
> channels and select them from the front panel; right now my
> skills aren't quite up to programming a 68HC11 and MC145170 combination
> for this job.
> Bill VE4STW
>
>
> bills@inqmind.bison.mb.ca
> The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

This sounds like a GLB synthesizer that was popular in early to mid 70's.
I think GLB still exists but I haven't seen an ad by them in years.
The kit was so popular that many people (including me) duplicated it.
Finally GLB responded by selling parts so people could build their own.
I still have one of the two I built and the GLB manual.
If the unit is made by GLB, it could be used for other bands
but it would have to be rebuilt. One problem is that the VCO
was potted with black silcon caulk, so it is hard to rebuild.

Channel selection can be done with a diode ROM or with a EPROM.
The only thing a uP does for you is make variable memories,
scanning different rates and displays easier.
But if you just want 10 channels (for the local repeaters)
and don't change them often, a rom works greats.
Makes a synthensized radio look like a late 60's early 70's
crystal controled radio.

Todays synthesizers do the whole job in 2-3 ICs.
Plus a uP to control it.

Joe Wilkes
WA2SFF

335. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 20:05:06 UTC
From: alanb@sr.hp.com
Message-ID: <CBAyGJ.Fn9@srgenprp.sr.hp.com>
Source record: 119850

Zack Lau (zlau@arrl.org) wrote:

: It might be interesting to do a DSP receiver with a TRF front end
: when the technology gets cheap enough for your budget. It ought to be
: possible to to an "intelligent" detector, one that can detect interference
: on one sideband and switch to the other. The band limited signal
: provided by the front end greatly eases the requirements of the A/D
: converter ...

There are two main challenges with the idea. One is dynamic range.
A 16-bit A/D only gets you about 96 dB. That would be plenty for an
IF filter: Most out-of-channel strong signals would have been pre-
filtered out with a crystal filter and an AGC system could keep the
desired signal well within the dynamic range of the A/D. But in a
TRF receiver, the A/D must simultaneously handle the desired weak signal
and all the unwanted strong signals within the preselector passband.

Let's say you amplify up the RF signal to that 1 LSB on the A/D
corresponds to .35 uV at the RF input. This would give you 3-bit
resolution (8 levels) on a 1 uV RMS (2.8 uV p-p) sine-wave signal.
Full-scale would then be 2^16 * .35e-6 = 23 mV p-p or 8 mV RMS (-29 dBm).

Note that the sum of the peak voltages of ALL undesired signals must
remain below 23 mV p-p. For example, if you have 10 signals at -50 dBm
(2 mV p-p each), the peak voltage is 20 mV, the same as a -30 dBm signal
(not -40 dBm as you might expect.)

The other problem is sample rate. If you use the DSP at a fixed
IF frequency, you can undersample at a rate determined by the IF
bandwidth, not the IF center frequency. A sample rate on the order
of 50 kHz or so would sufice for most communications receivers.
In a TRF receiver, the simplest method would be to sample at greater
than Nyquist rate (i.e. more than twice the highest RF frequency.)
You theoretically could use the undersampling trick, but you would
have to change the sample rate when the RF frequency is tuned to
avoid aliasing problems. Also, the TRF front-end filter is
presumably wider than the superhet's IF crystal filter, so the sample
rate would have to be higher.

Even if you undersample, the sample-and-hold circuit must be specified
at the RF/IF frequency, not at the sample rate. With a superhet, you
can use a fairly low last IF frequency, greatly easing the S/H specs.
A 60+ MHz S/H with 16-bit accuracy is not a low-cost off-the-shelf item!
And as I showed above, 16 bits would give marginal dynamic range.

Not to discourage anyone from trying out new ideas. But, be aware
it would not be a trivial project!

AL N1AL

336. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 20:26:07 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Aug5142607@m2000.dseg.ti.com>
Source record: 119851

I thought I had a reasonable handle on the most of the RF theory tossed around
in this newsgroup, but I have to ask:

What does "TRF" stand for?

By the way, this is a terrific newsgroup. I'm really enjoying it.

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

337. DSP the hard way

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 22:06:09 UTC
From: bills@inqmind.bison.mb.ca
Message-ID: <XwXT8B2w165w@inqmind.bison.mb.ca>
Source record: 119854

I see that its possible to buy a (US built!) V32.bis modem for something like $200 Canadian - when I got mine home and out of the box I noticed that some of the chips were prominently labelled "DSP" and "Texas Instruments 32040". Isn't the 320X0 series TI's line of DSP chips ?
And this particular modem uses an Intel 80188 for control purposes.
It would be a "moby hack" and a Good Thing if someone out there was able to reprogram one of these for such things as G3RUH or even regular 1200-baud packet - ideally without losing all those spiffy V.32bis things as well. I'd take a stab at it but without Dr. McCoy's "helmet of knowledge", " I don't have the skills, Jim !".
Bill

bills@inqmind.bison.mb.ca
The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

338. Re: Receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-05 23:36:52 UTC
From: drew@trl.oz.au
Message-ID: <drew.18.0@trl.oz.au>
Source record: 119852

In article <1993Aug2.131804.2610@kth.se> matsn@jaws.nada.kth.se (Mats N&#65533;slund) writes:
>From: matsn@jaws.nada.kth.se (Mats N&#65533;slund)
>Subject: Receiver
>Date: Mon, 2 Aug 1993 13:18:04 GMT
>I am posting this for a friend:
>
> I have been looking for a description of a synthesized, general
> coverage receiver without success.
> Does anyone out there have a reference to such a description ?
> Perhaps an article in some home-electronics magazine ?
>
>Tnx in advance
>
>Mats Naslund (SM3LGO/0)
>email: matsn@nada.kth.se
>Royal Institute of Technology
>Dept of Numerical Analysis & Computing Science
>Stockholm, Sweden
>

Hello Mats,

Electronics Now! Magazine (USA) had a receiver article entitled:

"World Band Receiver" designed by John Pivnihny, N2DCH for January 1993,

which may suit your friends application. There are some gaps in the coverage, as it is designed to cover international short wave bands between 5.95MHz and 18.1MHz AM.

Our local Amateur Radio Magazine (Australia) had a HF receiver entitled;

"Computarock Receiver for HF". Covers 3 to 28MHz SSB CW and AM. Although not a synthesised job (uses cheap computer crystals in a double conversion circuit). No claims to "high performance" are made. However, considering that it uses NE602,s for the two mixers, it does a pretty good job, especially for general short wave listening.

73, Drew, VK3XU.

339. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-06 05:23:45 UTC
From: rovero@bali.oc.nps.navy.mil
Message-ID: <CBBoBM.AIE@taurus.cs.nps.navy.mil>
Source record: 119862

Tuned Radio Frequency. All stages of amplification and selectivity
(not too much of the latter, usually), plus the detector all
operate at the same frequency as the signal of interest.

Lots of old console radios used TRF for both AM broadcast and shortwave
frequencies.

--
Josh Rovero (rovero@oc.nps.navy.mil) | Packet: KK1D @ K6LY
Department of Oceanography, Code OC/Rv |
Naval Postgraduate School |
Monterey, CA 93943 (408) 656-2084 |

340. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-06 06:43:51 UTC
From: zlau@arrl.org
Message-ID: <1990@arrl.org>
Source record: 119859

In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>In article <1975@arrl.org> zlau@arrl.org (Zack Lau) writes:
>>In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>
>>Why not a 1.1 MHz LC filter for a high performance AM receiver?
>>After all, people used to spend good money to have radios the size
>>of a Collins 75A-4 receiver. You could probably cascade two
>>6 pole filters and have plenty of room left over for the rest
>>of the receiver.
>
>I'm not sure what you're saying. For a TRF receiver for the broadcast
>band, you'd need a tunable *tracking* filter. I think that might be

If you look at the original post or even the subject line,
the idea was to design the ultimate *single* frequency receiver.

>hard to implement. If you've switched topics to superhets, then an
>in band IF filter probably isn't a good idea either. I agree that
>you can do higher frequency LC filters, the component tolerances
>become tighter for tight shape factors though.

The advantage to inductor/capacitors is the incredible dynamic range
possible compared to crystal or mechanical filters. I've not seen
a crystal filter that will handle 5 or 10 watts of RF. Admittedly I've
never seen more than 3 watts from a receive antenna, but I like to have
a safety factor :-). Of course, high Q inductors generally are big.
You may also run into temperature drift problems. But, there are cases
where the limitations are acceptable. You really have to run the numbers...
>
>>Also, you might not want such a tight filter in front of your DSP
>>hardware. A 200 kHz wide 10 MHz filter might actually make more
>>sense, so you can better analyze band conditions. Thus, LC
>>filters might make a lot of sense in high performance wideband
>>superhetrodyne receivers. Of course, you probably want to stick
>>with a narrow crystal filter for the few kHz you want to listen to.
>
>Now I think this makes sense. The DSP should be able to process a
>200 kHz band of signals and do any ideal filter you can figure out
>how to program. The only problem I see is that you might run out
>of dynamic range if there's a strong signal in the bandpass. I
>wonder if there's a way to derive a "digital" AGC voltage that
>can be fed back to the analog front end stages.

DSP can be more than just filters. Even with a limited dynamic
range, it ought to be possible to infer less than ideal conditions,

such as selective fading, thunderstorms, ignition noise, etc. It might even be able to detect distinctive characteristics of certain modes of propagation, such as signals coming in over the pole or distorted by aurora. In Hawaii, the distortion on Europeans over the pole is quite distinctive at times. I think it would be nice to have your receiver alert you to various propagation conditions. And if the DSP gets crunched by the station next door, it might still be worth having for those times in which you can use it.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

341. Re: Looking for SSB-chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-06 13:01:51 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug6.130151.23115@ke4zv.uucp>
Source record: 119855

In article <1993Aug5.082802.8402@fys.ruu.nl> vreeburg@fys.ruu.nl (Jurriaan Vreeburg) writes:
>Hi there,
>
>I'm looking for a single chip which is able of
>single-sideband-modulation. Not that I want to build my own transmitter,
>but I want to do a frequency shift of an audio signal by applying the
>audio signal and a 100Hz 'carrier' signal to this SSB-chip. The output
>signal, as far as I know, will be: audio + 100Hz.

No, I'm afraid it wouldn't work that way. If you try to modulate a lower frequency carrier with a higher frequency signal, you wind up with an alias component that can't be filtered out. You face much the same problem with trying to use a simple mixer.

There is a way to do it, but it's a bit more complex. What you have to do is modulate a higher frequency carrier, say 455 kHz, making a USB signal, and then build a SSB receiver that is fix tuned to 454.9 kHz. That'll give you a resultant audio signal shifted up by 100 Hz.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

342. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-06 13:33:53 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug6.133353.23386@ke4zv.uucp>
Source record: 119856

In article <1975@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, gary@ke4zv.uucp (Gary Coffman) writes:
>>I suspect we'll see DSP as IF replacement rather than as a TRF stage
>>follower because it pushes DSP frequency limits less and makes the
>>software simpler. I'm looking forward to it, however, it does make
>>building detectors with the keyboard possible.
>
>Not a whole lot less, as undersampling is feasible with the band limited
>TRF receiver. You turn the aliasing problem around into an *advantage*

Ok, I'll buy that, but wouldn't it make the code more difficult if the
radio is to be tunable? Seems like you'd have to change the sampling
rate in step with tuning, or modify the bins, or something. I only have
a hazy idea how DSP sampling affects signal processing.

>>There's the rub, LC filters with narrow bandwidths and good shape
>>are hard except at low frequencies. I assume by low you're probably
>>talking 85 kHz or so like certain older commercial equipment used.
>>That's not much use to a TRF design unless you're building a VLF
>>recevier.
>
>Why not a 1.1 MHz LC filter for a high performance AM receiver?
>After all, people used to spend good money to have radios the size
>of a Collins 75A-4 receiver. You could probably cascade two
>6 pole filters and have plenty of room left over for the rest
>of the receiver.

I'm not sure what you're saying. For a TRF receiver for the broadcast
band, you'd need a tunable *tracking* filter. I think that might be
hard to implement. If you've switched topics to superhets, then an
in band IF filter probably isn't a good idea either. I agree that
you can do higher frequency LC filters, the component tolerances
become tighter for tight shape factors though.

>Also, you might not want such a tight filter in front of your DSP
>hardware. A 200 kHz wide 10 MHz filter might actually make more
>sense, so you can better analyze band conditions. Thus, LC
>filters might make a lot of sense in high performance wideband
>superhetrodyne receivers. Of course, you probably want to stick
>with a narrow crystal filter for the few kHz you want to listen to.

Now I think this makes sense. The DSP should be able to process a
200 kHz band of signals and do any ideal filter you can figure out
how to program. The only problem I see is that you might run out
of dynamic range if there's a strong signal in the bandpass. I
wonder if there's a way to derive a "digital" AGC voltage that

can be fed back to the analog front end stages.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

343. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-06 13:50:10 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug6.135010.23644@ke4zv.uucp>
Source record: 119857

In article <LINNIG.93Aug5142607@m2000.dseg.ti.com> linnig@m2000.dseg.ti.com (Mike Linnig) writes:
>I thought I had a reasonable handle on the most of the RF theory tossed around
>in this newsgroup, but I have to ask:
>
>What does "TRF" stand for?

TRF stands for Tuned Radio Frequency. It describes a type of receiver where RF stages on frequency build up the signal level to drive the detector directly rather than mixing to an IF first and making the bulk of the gain and selectivity there. You tune the radio by retuning the LC circuits of each amplifier stage rather than tuning a local VFO. The problems with this approach are many. Among them are getting good tracking of all the tuned circuits, maintaining stability of the high gain RF stages, and achieving a controlled and consistent shape factor on selectivity as you change the frequency of the receiver. Armstrong's superhet design pretty much obsoleted the TRF.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

344. Handi-Finder Questions

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 02:01:02 UTC
From: norton@joker.optics.rochester.edu
Message-ID: <NORTON.93Aug7020102@joker.optics.rochester.edu>
Source record: 119863

[No readable article body recovered]

345. Handi-Finder Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 02:05:25 UTC
From: norton@joker.optics.rochester.edu
Message-ID: <NORTON.93Aug7020525@joker.optics.rochester.edu>
Source record: 119864

Has anyone built the HandiFinder kit reported in the, I believe
May or June issue of QST?
I just assembled the kit which is supposed to emit a tone when
there is a phase difference between two antenna. I had heard that
there were some postings on mods for this kit.
My difficulty is the volume of the tone. Its extremely faint.
Im not sure if a component is burned out causing this or if this is
the "norm". Has anyone had any experience with this kit?
I would really appreciate any responses.
Thanx!
Scott Norton
norton@joker.optics.rochester.edu

346. Re: DSP the hard way

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 05:25:00 UTC
From: cecilmoo@news.delphi.com
Message-ID: <23vebc$dij@news.delphi.com>
Source record: 119860

bills@inqmind.bison.mb.ca (Bill Shymanski) writes:

>And this particular modem uses an Intel 80188 for control purposes.
>It would be a "moby hack" and a Good Thing if someone out there was
>able to reprogram one of these for such things as G3RUH or even regular
>1200-baud packet - ideally without losing all those spiffy V.32bis things
> Bill

If the applications software is downloaded, then you have a good chance
to write some additional applications. If the applications software is
in EPROM then it is a lot more difficult. In any case, find out from
the manufacturer if you can write your own applications programs.
CECILMOORE@DELPHI.COM

347. Re: Single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 06:11:05 UTC
From: tmg@panix.com
Message-ID: <23vh1p$inn@panix.com>
Source record: 119861

In Cornell Drentea's Radio Communication Receivers there is a wonderful digital AGC circuit. I implemented on a receiver I built some years ago, and it works well. These days, I'd replace the counter circuits used to implement the delay with a loop in the control microprocessor, and feed the DAC directly. Basically, the idea is this:
Digitize the audio, and feed the result as a seed into a counter. The counter generates a stable ramp of known (and programable) attack characteristics. When the audio drops below the preset, generate a decay ramp. That's all there is to it.
Tom G.

348. Re: Looking for SSB-chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 13:39:11 UTC
From: chris@kd3bj.uucp
Message-ID: <CBE5xB.6u2@kd3bj.uucp>
Source record: 119769

gary@ke4zv.uucp (Gary Coffman) writes:

>In article <1993Aug5.082802.8402@fys.ruu.nl> vreeburg@fys.ruu.nl (Jurriaan Vreeburg)
writes:
>>I'm looking for a single chip which is able of
>>single-sideband-modulation. Not that I want to build my own transmitter,
>>but I want to do a frequency shift of an audio signal by applying the
>>audio signal and a 100Hz 'carrier' signal to this SSB-chip. The output
>>signal, as far as I know, will be: audio + 100Hz.

>No, I'm afraid it wouldn't work that way. If you try to modulate a
>lower frequency carrier with a higher frequency signal, you wind up
>with an alias component that can't be filtered out. You face much
>the same problem with trying to use a simple mixer.

Yes a "simple" mixer would make an alias audio+100 and audio-100, but
Jurrian is asking if there is a SSB mixer available at audio. Such
a mixer would actually be a pair of simple mixers connected to two
90-degree phase shift networks and an output sum/difference hybrid.
Such a mixer cancels most of the alias component internally.

I, personally know of no single chip ANALOG solution for an audio SSB
modulator, although I've seen a number of circuits for this using several
op-amps and a pair of multipliers. Of course, a single DSP chip can easily
implement a very good SSB modulator in the digital realm.
--
73 de KD3BJ (Chris Nadovich, chris@flam.com)

349. Re: DSP the hard way

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-07 17:01:01 UTC
From: bills@inqmind.bison.mb.ca
Message-ID: <e59w8B3w165w@inqmind.bison.mb.ca>
Source record: 119866

cecilmoo@news.delphi.com (CECILMOORE@DELPHI.COM) writes:

> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
>
> >And this particular modem uses an Intel 80188 for control purposes.
> >It would be a "moby hack" and a Good Thing if someone out there was
> >able to reprogram one of these for such things as G3RUH or even regular
> >1200-baud packet - ideally without losing all those spiffy V.32bis things
> > Bill
>
> If the applications software is downloaded, then you have a good chance
> to write some additional applications. If the applications software is
> in EPROM then it is a lot more difficult. In any case, find out from
> the manufacturer if you can write your own applications programs.
> CECILMOORE@DELPHI.COM
>

I may have leapt to a conclusion here; last night I pulled the modem
out and looked for chip numbers. There is a TMS32044CFN on the board
but it only has 28 pins; too few, I'm told, for a DSP. THe chip that's
prominently marked "Texas Instruments DSP" also is marked "16-701",
some other stuff, and "Copyright US Robotics" - implying that this chip
contains firmware or a mask ROM, not accessible to the user to change.
Darn it all. So, the Sportster might use DSP techniques and may
even be upgradeable (there's a small socketed ROM on the board), but
seems not to be a prospect for use with packet. Drat.
Bill

bills@inqmind.bison.mb.ca
The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

350. INSTRUCTION/OPERATORS MANUALS up for grabs:

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-08 00:11:44 UTC
From: lockhart@mothra.nts.uci.edu
Message-ID: <2C6444C0.21277@news.service.uci.edu>
Source record: 119865
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.antenna,rec.radio.amateur.misc

I have the following INSTRUCTION/OPERATORS MANUALS up for grabs:

MAGNUM SIX RF SPEACH PROCESSOR

HY-GAIN 18HT HY-TOWER 10-80 METER

HY-GAIN THUNDERBIRD (TH3Mk30 THREE ELEMENT HAM ANTENNA

HY-GAIN BALUN MODEL No. BN-86

CDE HAM II ROTOR

COLLINS KWN-2 and KWM-2A TRANSCIEVERS

COLLINS SM-3 MICROPHONE

COLLINS 312B-4 & 312B-5 STATION CONTROLS

SPECTRONICS DD-1C DIGITAL FREQUENCY DISPLAY (used in conjunction with the COLLINS KWM2/2A
transceivers).

All INSTRUCTION/OPERATORS MANUALS are in various states of condition. Some are in good condition and some are in poor condition.

The intent is to give these INSTRUCTION/OPERATOR MANUALS to an individual or entity who ACTUALLY has the equipment.

The first person to send me e-mail gets the booty. Please send a separate e-mail request for each INSTRUCTION OR OPERATORS MANUAL. You will be asked to send a SASE (large manila or other envelope) with the appropriate amount of U.S. postage to me c/o the address in my .sig file.

For those of you who are interested, the reason these INSTRUCTION/OPERATOR MANUALS are available is because some

$(%&*#+=$_$)* IDIOT

trashed (read distroyed) the University of California, Irvine, WB6KGN amateur radio club ham station. All of the equipment was rendered unusable. There wasn't anything to salvage (except the instruction/operator manuals. So, there you have it.

Don't be suprised if it takes me a while to get back to you. I am very busy these days. All requests will be answered.

Good luck to one and all.

73,

~jack_

/\/\/\

351. Uniden HT board sets?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-08 02:37:23 UTC
From: jfh@netcom.com
Message-ID: <jfhCBF5yC.MJv@netcom.com>
Source record: 119867

There's an advertisement in QST for 2 meter HT circuit board sets,
"manufactured by Uniden for Midland". I'm interested in putting together a
small and cheap packet station to communicate with the BBS across the
street, and this might be just the thing. Does anyone have any experience
with it?

--

Jack Hamilton jfh@netcom.com kd6ttl@n0ary.#nocal.ca.us.na (AMPR)
Post Office Box Box 281107 San Francisco, California 94128 USA

352. Re: DSP the hard way

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-08 04:13:53 UTC
From: j-monkman@uiuc.edu
Message-ID: <j-monkman.25.744783233@uiuc.edu>
Source record: 119768

In article <e59w8B3w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
>
>I may have leapt to a conclusion here; last night I pulled the modem
>out and looked for chip numbers. There is a TMS32044CFN on the board
>but it only has 28 pins; too few, I'm told, for a DSP. THe chip that's
>prominently marked "Texas Instruments DSP" also is marked "16-701",
>some other stuff, and "Copyright US Robotics" - implying that this chip
>contains firmware or a mask ROM, not accessible to the user to change.
>Darn it all. So, the Sportster might use DSP techniques and may
>even be upgradeable (there's a small socketed ROM on the board), but
>seems not to be a prospect for use with packet. Drat.
> Bill

I'm sure exactly what you want to do, but if you're looking for a modem that can be hacked, the ZyXEL modems seem to be ideal candidates. They have a Motorola 68000 MPU, 2 TI DSP chips (I forget which kind) and all the firmware (I'm pretty sure all) is in 2 EPROMS. They're pretty fast too. The bottom end modems can support up to 16.8 Kbps, the rest can go to at least 19.2 Kbps.

Jay Monkman
j-monkman@uiuc.edu

353. Re: Looking for SSB-chip

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-08 17:32:41 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug8.173241.3814@ke4zv.uucp>
Source record: 119771

In article <CBE5xB.6u2@kd3bj.uucp> chris@kd3bj.uucp (C. T. Nadovich) writes:
>gary@ke4zv.uucp (Gary Coffman) writes:
>
>>In article <1993Aug5.082802.8402@fys.ruu.nl> vreeburg@fys.ruu.nl (Jurriaan Vreeburg) writes:
>>>I'm looking for a single chip which is able of
>>>single-sideband-modulation. Not that I want to build my own transmitter,
>>>but I want to do a frequency shift of an audio signal by applying the
>>>audio signal and a 100Hz 'carrier' signal to this SSB-chip. The output
>>>signal, as far as I know, will be: audio + 100Hz.
>
>>No, I'm afraid it wouldn't work that way. If you try to modulate a
>>lower frequency carrier with a higher frequency signal, you wind up
>>with an alias component that can't be filtered out. You face much
>>the same problem with trying to use a simple mixer.
>
>Yes a "simple" mixer would make an alias audio+100 and audio-100, but
>Jurrian is asking if there is a SSB mixer available at audio. Such
>a mixer would actually be a pair of simple mixers connected to two
>90-degree phase shift networks and an output sum/difference hybrid.
>Such a mixer cancels most of the alias component internally.

Yeah, but you don't get audio+100 and audio-100. What you get is
100+audio and 100-audio. Now if the audio is greater than 100 Hz,
the frequency you get as an alias has a nasty - sign in front of
it. Now what that really means is that the audio suffers a phase
reversal, but it screws up your phasing SSB network and you don't
get the cancellation you expect. That's why you have to modulate
a carrier that's higher in frequency than the highest modulation
frequency so the sign always stays positive.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

354. ICOM 2GAT

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-08 18:58:25 UTC
From: swamik@orca.ele.uri.edu
Message-ID: <CBGFDD.4H5@egr.uri.edu>
Source record: 119770

I want to build a homebrew Headset Mike for my ICOM 2GAT 2m HT.
How are ICOM radios keyed via the ptt line. Does my HT provide dc for
an electret mike? Any other components, circuits needed?

tnx

Swami Kumaresan
swamik@orca.ele.uri.edu
swamik@morio.e-technik.uni-kl.de
KB1AMB@KA1AZ.RI (Ham Radio BBS)
kb1amb@kb1amb.ampr.org AMPRNet (Amateur Packet Radio TCP/IP Network)

KB1AMB/AA Advanced Class Amateur Radio Operator
I Monitor 147.165/.765 Repeater
& 20 meter band (SSB & CW)

73s

---

355. phone wiring

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 00:50:59 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Aug9.005059.6217@mksol.dseg.ti.com>
Source record: 119772

com
Any one out there familiar with phone circuits? I've got several
"extension" cables for phone jack to whatever (modem, phone, etc):
flat grey cable, little plastic RJ connector with spring clip,
4 conductors (black, red, green, and yellow). I think they are
called modular cables.
On all but one cable the wires are reversed (b-r-g-y on one end,
y-g-r-b on the other). But the one I'm using now to connect my
modem to the phone jack doesn't have the 4 wires reversed. It's
the longest cable I have, thats why I'm using it. Is this cable
right, or did Radio Shack screw up? It works ok unless I pick
up the phone that's connected to my modem. Neither modem nor
phone likes that. They both get pretty upset.
I want to replace this cable with a shielded version. But I need to
know if I should reverse the wires before crimping the connectors
on. Also, do you strip the wires before inserting them into the
connector? If so, how much? What should I ground the shield to?
(the modem end or the jack end?). Or should I ground it at all?
Thanx.
Art.

356. Ramsey FM-440 Info wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 01:50:32 UTC
From: drsmith@uts.EDU.AU
Message-ID: <244ah8$54i@sequoia.itd.uts.EDU.AU>
Source record: 119773

Thanks for any help

Darryl vk2tds

357. Re: phone wiring

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 12:50:11 UTC
From: oppedahl@panix.com
Message-ID: <245h63$8u5@panix.com>
Source record: 119774

In <1993Aug9.005059.6217@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:

>Any one out there familiar with phone circuits? I've got several
>"extension" cables for phone jack to whatever (modem, phone, etc):
>flat grey cable, little plastic RJ connector with spring clip,
>4 conductors (black, red, green, and yellow). I think they are
>called modular cables.

>On all but one cable the wires are reversed (b-r-g-y on one end,
r
>y-g-r-b on the other). But the one I'm using now to connect my
>modem to the phone jack doesn't have the 4 wires reversed. It's
>the longest cable I have, thats why I'm using it. Is this cable
>right, or did Radio Shack screw up? It works ok unless I pick
>up the phone that's connected to my modem. Neither modem nor
>phone likes that. They both get pretty upset.

Much of this answer is paraphrased from The Phone Book, ISBN 8-89043-364-X,
published by Consumer Reports, chapter 15.

Each pair of wires providing a dial tone has a distinct electrical
polarity. Generally the red wire is negative relative to the green
one, and the yellow one is negative relative to the black one.

If you spend a moment or two sketching out the interconnections
(imagine a cable, with a female-to-female adaptor at one end, serving
as an extension cord) you will agree that to maintain the polarity
it is necessary to swap red and green at the two ends of a modular
cable. Same for yellow and black.

Necessary in the sense that if the telephone instruments are polarity
sensitive, then failing to swap red and green would cause trouble for
the instruments. But these days few newly-manufactured products are
polarity sensitive.

Your post contains what I suspect is the real answer -- the cable is
"long". This leads to crosstalk between line 1 and line 2, which would
reveal itself most often when, say, you pick up the voice line while
in the middle of a data connection.

The best fix here is to stop running line 1 and line 2 in parallel
for that length. Instead, use two separate cables. To effectuate
that, you should either break the one two-line jack up into two jacks (one
for line 1 and one for line 2) or use a two-line adaptor that provides
each line individually from the two-line jack.

>I want to replace this cable with a shielded version. But I need to
>know if I should reverse the wires before crimping the connectors
>on. Also, do you strip the wires before inserting them into the
>connector? If so, how much? What should I ground the shield to?
>(the modem end or the jack end?). Or should I ground it at all?

There are several problems with what you are saying here. The first is that you will not be able to connect shielded cable to the modular plugs -- the plugs were designed specifically for flat satin flexible phone cable, with aluminized mylar conductors. The plugs (I assume you are talking about the crimp connectors) will not work with traditional stranded wire.

Yes, if you feel you must make your own modular cable, you should definitely swap red and green, and yellow and black. Most crimping tools for modular cables come with this instruction, as well as instructions that if you are using the correct type of cable (the satin finish flat cable) you strip off a standardized length of the outer jacket (using a calibrated stripper that is in the tool) but do not strip the colored wires inside.

If the cable you want to use, that has a shield, simply has a shield around both pairs, then you are still going to have your crosstalk. Indeed it may be worse with the shield confining the electromagnetic fields from the wires.

The way to avoid crosstalk between two phone lines is to select cable in which the red and green are twisted around each other, and as a separate matter the yellow and black are twisted around each other. Actually when you find wire that meets this twisting requirement you will generally find it does not have the red, green, yellow and black colors. Instead, pair one is blue and white striped, and pair two is orange and white striped.

Of course, such wire does not fit into modular plugs for crimping, so to use it you would have to actually install new jacks, stapling wires to baseboards and the like.

Yet another way to reduce crosstalk is to use a short cable instead of a long one. But I assume you are using a long cable because you need to ...

--
Carl Oppedahl AA2KW (patent lawyer)
1992 Commerce Street #309
Yorktown Heights, NY 10598-4412
voice 212-777-1330

358. Re: single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 13:43:42 UTC
From: fentem@esmlsun.gatech.edu
Message-ID: <fentem.8.744903822@esmlsun.gatech.edu>
Source record: 119775

Thought I'd jump in here and describe one I built a few years ago. It was a TRF receiver designed to pick up WSM (650 kHz) only. After trying several receiver architectures, including mixing down to 455 kHz, I found the one that worked best for me was simply cascaded stages of JFET amplifier stages. Brute force, but clean and simple.

Between each stage was a double-tuned LC filter. The coils used here were some 455 kHz transistor IF transformers obtained from Mouser, modified by removing the internal capacitor. Their unloaded Q at 650 kHz measured around 100.

I observed careful layout techniques and had absolutely no instability problems. Tuning/alignment was smooth, and the JFETs were easy to work with and control.

The input stage was configured with a pair of JFETs in a push-pull arrangement. Transformer coupling provided a balanced input; the antenna was a 2 foot tuned loop. This helped provide some relief from power line noise.

The detector I ended up using was an absolute value amplifier circuit using an OP-27 op amp. Easy to build, and works very well.

Since WSM transmits in AM stereo, I also tried a C-QUAM demodulator using Motorola's MC13020. This circuit worked well with a strong signal, but I found distortion to be a problem during multipath fading. So it was abandoned.

A second OP-27 op amp detector was used to develop AGC voltages for the JFETs. I used small trimpots to set the voltages for each stage.

I'd ordered a couple dozen JFETs, and measured each one's pinch-off voltage and IDSS. From these, I selected matched ones to use in the receiver.

I used modular construction throughout so I could try different circuits with minimum hassle. I learned a lot in the process and had a lot of fun doing it. And the final result was very rewarding.

$.02

-Dave, KW4M

+--+
David R. Fentem	david.fentem@gtri.gatech.edu
Georgia Tech Research Institute	CompuServe: 70674,3306
GTRI/ESML	Voice: (404) 894-7045
Atlanta, GA 30332-0800	FAX: (404) 894-7080
+--+

359. Re: single frequency receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 14:40:32 UTC
From: fentem@esmlsun.gatech.edu
Message-ID: <fentem.9.744907232@esmlsun.gatech.edu>
Source record: 119776

Oops - follow up to my previous post. I used an NE5539 op amp for the detector, not an OP-27.

(What I get for trying to rely on memory :)

-Dave, KW4M

+---+
David R. Fentem	david.fentem@gtri.gatech.edu
Georgia Tech Research Institute	CompuServe: 70674,3306
GTRI/ESML	Voice: (404) 894-7045
Atlanta, GA 30332-0800	FAX: (404) 894-7080
+---+

360. AM/FM Antennas using tv antenna- help needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 15:42:00 UTC
From: inde8fh@jane.uh.edu
Message-ID: <9AUG199310425701@jane.uh.edu>
Source record: 119777

I wanted to make an antenna using tv antenna (two of them -VHF and UHF) that I have lying around. I have cable now so I am not using these antennas right now. The idea is to get distant AM/ FM stations. Anybody got any suggestions? I am using an ordinary portable stereo reciever -Panasonic's RX-CT840 right now. If I really get hooked to dxing I might get a better receiver. Pls. post here or send me a reply. I will try to accumulate all of them and post them here if I get sufficient replies.
Don

AND GOD CREATED MAN

361. Re: DSP receiver (was: Single frequency receiver)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 16:28:45 UTC
From: jbloom@arrl.org
Message-ID: <1993@arrl.org>
Source record: 119778

In rec.radio.amateur.homebrew, alanb@sr.hp.com (Alan Bloom) writes:
>Zack Lau (zlau@arrl.org) wrote:
>
>: It might be interesting to do a DSP receiver with a TRF front end
>: when the technology gets cheap enough for your budget. It ought to be
>: possible to to an "intelligent" detector, one that can detect interference
>: on one sideband and switch to the other. The band limited signal
>: provided by the front end greatly eases the requirements of the A/D
>: converter ...
>
>There are two main challenges with the idea. One is dynamic range.
>A 16-bit A/D only gets you about 96 dB. That would be plenty for an
>IF filter: Most out-of-channel strong signals would have been pre-
>filtered out with a crystal filter and an AGC system could keep the
>desired signal well within the dynamic range of the A/D. But in a
>TRF receiver, the A/D must simultaneously handle the desired weak signal
>and all the unwanted strong signals within the preselector passband.

Exactly. And in order to achieve the theoretical dynamic range of
any A/D, the analog circuitry "up front" in the A/D must exhibit
dynamic range sufficient to the task. That is, a theoretical 20-bit
A/D with 120-dB dynamic range requires that its analog circuitry
cope with a 120+ dB range of input signals. The idea that using
DSP in a receiver eliminates the requirement for high-dynamic-range
analog circuitry just ain't so. (As an example, the Analog Devices
AD776, a 16-bit sigma-delta A/D, specs third-order IMD at -98 dB,
which is slightly better than the 96-dB range of 16-bit quantization.)

[appropriate example deleted]

>The other problem is sample rate. If you use the DSP at a fixed
>IF frequency, you can undersample at a rate determined by the IF
>bandwidth, not the IF center frequency. A sample rate on the order
>of 50 kHz or so would sufice for most communications receivers.
>In a TRF receiver, the simplest method would be to sample at greater
>than Nyquist rate (i.e. more than twice the highest RF frequency.)
>You theoretically could use the undersampling trick, but you would
>have to change the sample rate when the RF frequency is tuned to
>avoid aliasing problems.

If you sampled based on the IF bandwidth, yes, but another option
would be to sample at a rate that encompasses the tuning range of
the receiver. Wide front-end filters would act as the anti-aliasing
filters. Of course, this scheme exacerbates the dynamic-range
problem, but what do you want, egg in your beer?

>Even if you undersample, the sample-and-hold circuit must be specified
>at the RF/IF frequency, not at the sample rate. With a superhet, you
>can use a fairly low last IF frequency, greatly easing the S/H specs.
>A 60+ MHz S/H with 16-bit accuracy is not a low-cost off-the-shelf item!
>And as I showed above, 16 bits would give marginal dynamic range.

You bet. And the more bits you use, the more stringent the
requirements on the S/H. The key characteristic is the *aperture*
time, which can be loosely defined as the period of uncertainty
in the sampling process. Even moderately small (12- to 16-bit) A/Ds
impose very short aperture time requirements. For example, a 16-bit
A/D sampling at 200 ksps allows an aperture time of only about
25 nsec. That requires some pretty fast (wide bandwidth) analog
circuitry!

>Not to discourage anyone from trying out new ideas. But, be aware
>it would not be a trivial project!

Yep. What the sample-at-operating-frequency HF ham receiver needs is
a 20-bit (more would be better) sampling A/D (with intermod performance
to match) that can operate at, say, 60 Msps. Oh, and cost less than
$100. I've yet to see one. Until I do, I'll continue to promote the
idea of sampling at a reasonable (low) IF.

By the way, this stuff isn't just theory. Sampling at IF is what W-J's
DSP-based receiver does. I've played with IF sampling, too, undersampling
the 100-kHz IF output of my TS-930S with an 8-bit A/D (the same one used
in the W9GR box, actually) and processing the samples with a TMS320C25
operating at a 32-MHz clock rate. [For those who are interested, I'm
sampling at about 30 kHz, more precisely at (100/3.25) kHz, which places
the 100-kHz IF center frequency in the middle of the 92.3- to 107.7-kHz
(3-3.5 Fs) aliased sampling range. Of course, I'm not sure how well the
6-kHz AM filter attenuates signals at a bandwidth greater than 15 kHz, but
I'm just playing around anyway, so I don't care if a little unwanted slop
aliases into the system.]

I implemented the classic SSB phasing-type demodulator on this system.
When I get some time (hah!) I plan to finish the job by providing phase
locking of the "BFO" (within the DSP, you understand) to the AM carrier
for AM synchronous detection. The point is that the radio's superhet
circuitry, including the AGC, allows use of an 8-bit A/D.

For the time being, at least, down conversion to a low IF is still the
best approach for a DSP-based ham receiver. Systems that don't impose
the high-dynamic-range requirements hams have may be able to use DSP
directly at operating frequency; we can't--yet.

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

362. Synth for 15 to 20 MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 18:36:37 UTC
From: bdonal@elaine.ee.und.ac.za
Message-ID: <bdonal.229.0@elaine.ee.und.ac.za>
Source record: 119779

Hi,

I am in the process of designing a synthesiser for a rig that will cover the 2m and APT satellite bands. Since the receiver has a * by 8 stage, and a 10.7 MHz IF, what I require is a synthesiser capable of covering the the range from 15.66 to 18.16 MHz, in 1.25 KHz steps.

If anyone can point me in the direction of circuits for such a system, I would greatly appreciate it - there must be many people who have converted their 2M 'rock' sets to synth. Any pointers to synth IC's covering this range would also be great. With the cost of crystals at about $20 per set, the synth option seems the way to go, since I would ideally like to receive at least 15 channels.

By the way, I have read the section in the ARRL handbook on synth chips, and could no doubt design the synth that I need. What I really need is advice on the easiest, and cheapest, way of doing what I want.

_____ _____
Brian. |//////\ |//////\ /___/\
|///|)//| |///| |///| | |
|//////< |///| |///| _ * * _
|///|)//| |///|_|///| - /_\ -
|/////// #/ |/////// #/ ---

Email: bdonal@elaine.ee.und.ac.za
Fax: (27) 31-8162111

363. ATV VSB filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-09 20:55:16 UTC
From: dtiller@cscsun.rmc.edu
Message-ID: <CBIFG5.Jqv@cscsun.rmc.edu>
Source record: 119780

Good day, folks. I've just bought a house with a pretty 125' tower, and have
a serious hankering to put some ATV up there - camera and repeater. I've got
a PC electronics xmitter and a Mirage amp - unfortunately the xmitter isn't
of the VSB persuasion. I've been looking at the specs for interdigital
filters, but would prefer something better to work with than charts and tables.
Does anyone know of reasonable software to help design UHF 1% b/w ID filters?
Any pointers will be greatly appreciated (including other filters to consider.)
--
David Tiller | Network Administrator | Voice: (804) 752-7373 |
dtiller@rmc.edu | Randolph-Macon College| Fax: (804) 752-7231 |
n2kau@wa4ong.va.usa.na | P.O. Box 5005 |"A Woman Scorned is a |
ICBM: 37 45N 77 45W | Ashland, Va 23005 | terrible thing to waste" -me|

364. Cubic Incher

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 14:12:58 UTC
From: sjhawk2@srv.PacBell.COM
Message-ID: <1993Aug10.141258.4094@PacBell.COM>
Source record: 119782

I saw a remark the other day that refered to a kit by someone in the U.S. called a "Cubic Incher". From what I could glean it is some kind of qrp transmitter. If anyone knows much about the Cubic Incher please tell me about it by Email. Thanks Steve Hawkins WV6U 73 49 0100 1001

365. Cubic Incher

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 14:20:15 UTC
From: sjhawk2@srv.PacBell.COM
Message-ID: <1993Aug10.142015.4239@PacBell.COM>
Source record: 119781

[No readable article body recovered]

366. Single-Frequency Receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 16:09:56 UTC
From: dnewkirk@arrl.org
Message-ID: <2004@arrl.org>
Source record: 119783

I haven't had the time to follow all of the discussion on this thread, but will now add mine to the stew because its initiator -- richard@alaska.et.byu.edu, who I regrettably can't easily refer to by his full name because I no longer have a full copy of his message -- sent out info requests both to newsgroups and individuals. Here, somewhat annotated (in the form of "afterthoughts," is my response to Richard's email direct to me.

Background: I took the approach that what Richard is after is not an asymptotic discussion on what "should" go into "the ultimate mediumwave receiver" (there's no single such thing because of goal variability), but an *actual buildable* radio the design of which springs from a defined application. True, that definition isn't stated numerically -- good thing, since I'm not a degreed engineer -- but experience with the technology can suggest a few approaches to achieving the class of performance he seeks without requiring the reinvention of the wheel, or even resorting to the latest possible wheel. Those with a yen for numbers can (and will) likely want to say more.

On we go:

>I think I have a unique question for you or you friends there at ARRL.
>
>There is a radio station here in Utah that covers event here at BYU
>(Brigham Young Universtiy - Provo, Utah). It is KSL 1160 kHz. I am
>lucky that it is a clear channel station operating at 50 kW.

Yes. You should be aware, however, that there is actually no longer any such thing as a "clear-channel" station -- in fact or by regulation. FCC abolished the concept sometime ago. The 1994 *World Radio TV Handbook* shows that between 15 and 25 US stations operate on 1160 at night. Their coverage is restricted by power and antenna pattern, but you should be aware that they may considerably limit your ability to receive KSL around the US at night. (You might do as well or better to find out if the BYU feed is available via some single channel per carrier [SCPC] satellite downlink and develop a portable system to receive same... :-))

>I want to design and build a radio that is optimised to recieve this
>station at great distances. The radio can be broken down in four
>categories. Antenna - Narrow band Pre-amp - Filter - mixer and/or
>mixer - audio.

>I have been reading a lot of books for help and these are the
>conclusion I have come to.
>
>A. The ferrite core of the antenna needs to be long and wide. I
>intend to make it 1"x20". The coil should exist over most of the
>length of the rod so that the maximum number of turns for a given
>inductance is achieved. Also the amount of inductance should be
>minimized to increase the S/N ratio. I have chosen 70 microH. for
>the design. This also increase the possible Q.
>
>B. The design of the antenna and the pre-amp is going to be as
>symetrical as possible all enclosed in an electrostatic shield to make
>sure the null is the deepest it can be.

Okay -- the details are largely beyond me -- but don't be
disappointed when you discover that nearby metal objects shift
the null and/or make it shallower. You will not be able to
achieve the null depth your math predicts, and your antenna's
pattern shape will vary with the presence of surrounding
conductors.

+WJ1Z afterthought: Pursuing "high-Q-ness" to extreme in a loop
+made for this frequency range can easily cut received-signal
+sidebands. As an analogy, it's also nontrivial for transmitter
+designers "down here" to contend with possible amplifier and
+modulator instability due to narrow antenna-array SWR bandwidths.

>C. The filter is either going to be an RL or a crystal filter. This
>part I haven't really thought about yet.

Don't drive yourself nuts with details. (I see that your project
has sparked quite a lot of hundredth-of-a-decibel hand-wringing
in at least one of the ham newsgroups. Remember that you are
after something *practical*.) MuRata and others make ceramic IF
filters that will do just fine for your application. I recommend
an IF bandwidth of around 6 kHz (you're going to tune off to
either side for demodulation, so you'll be able to get audio
highs up to 4 to 6 kHz, depending on how you tune.) A -60- to
-6-dB shape factor of 2 is emminently buyable. So a filter that's
6 kHz wide at -6 dB and 12 kHz wide at -60 dB should be fine.
(You may need to cascade filters to achieve this 2:1 number.)

+WJ1Z Afterthought: Remember, the application is BYU basketball audio,
+not CD-quality freq response. We don't need resp out beyond 5 kHz,
+esp if getting it will compromise the RF performance of the radio.
+Keeping in-band IMD down, a separate issue, is worthwhile,
+however.

Remember that your antenna will add to this selectivity somewhat,
through its bandwidth *and* (in effect) through its directivity.
The nearest channels you must worry much about (I'm disregarding
"splits"--foreign stations operating on other than 10-kHz
spacing) are 1150 and 1170. The antenna selectivity will help

your receiver's front end materially, and greatly reduce the attention you must pay to front-end "strength." In this connection, though, use only enough preamplification to make up for antenna inefficiency and slightly overcome your mixer's noise (or loss).

>D. Mixer/Detector This is the part I have a question on. Which
>method is the best for my type of reception. I know of the following
>types.
>
>1. I could use a MC1496 and directly modulate the signal to the
>audio band.
>2. Just use a diode detector and don't mess with anything else.
>3. Use a diode ring or JFET ring like the SD8901
>4. Use a single JFET
>5. Use a PLL.

Use a doubly balanced diode-ring mixer (Mini-Circuits SBL-1 will do fine) to convert KSL to 455 kHz. Good idea to use a high-standing-current transistor (or two in push-pull) as a post-mixer amplifier. Use one or two MC1350P ICs for automatic-gain-controlled IF amplifiers. (One is better than two if one gives you enough gain and AGC range. I say this because an IF amplifier must have sufficient output headroom to handle without crunchy-sounding overload distortion the power peaks present in double-sideband, full-carrier signals. [This issue is largely unknown to many ham-transceiver users, who also commonly wonder why their "100-watt" SSB transmitters are rated for "only" 25 watts, carrier, for full-carrier, double-sideband AM...] More IF gain than you need can throw away IF headroom necessary and disallow hi-fi AM reception.

+WJ1Z afterthought: Even a low-Q SWLesque air-core loop will have
+a 3-dB bandwidth no greater than a single channel width or so over
+much of the standard broadcast range. *And* the incoming signals
+are channelized and placed according to a knowable scheme. This
+significantly relaxes the associated front end's IMD-resistance
+requirements compared what our MF/HF radios must contend with in
+unchannelized/random search/pileup situations.

You don't have to worry about AGC attack/decay times for MF AM reception in the way that hams do, since the carrier sets the AGC level and will not change strength rapidly enough to matter. (Hams receiving Morse and carrierless SSB voice signals need AGC capable of responding favorably to sudden, repetitive signal onsets.) This doesn't mean you need pay no attention to AGC attack/decay; you must be sure your AGC system cannot respond rapidly enough to flatten low-freq-audio modulation peaks.

>Would you happen to know which of these methods or another one that
>you know about would be the best to use for weak signal listening.

Again, don't drive yourself wild with details. Stay away from using *only* "diode" ("envelope," "rectification") detection because skywave signals at MF are subject to l o n g selective fades that can attenuate the carrier for periods of seconds to minutes. A diode detector needs carrier to heterodyne the sidebands back to audio, so carrier troughs make recovered audio sound awful. If you use a diode detector, all of your careful engineering work will give you recovered audio no better than any old AM radio -- but you deserve better.

+WJ1Z afterthought: I did not mention that diodes have a
+detection threshold. (No, biasing them close to conduction
+causes other problems. And anyway a diode requires solid carrier
+to work +well.) The article I'm about to mention does, however.

To get around this problem in a way that won't drive you nuts reinventing the wheel, build the synchronous detector featured in July 1993 *QST* (pages 28-33). It operates at 455 kHz and provides true synchronous detection (PLL-controlled local carrier reinsertion during heterodyne detection). I prepared this article for *QST* and daily use my version of the circuit for shortwave reception; it does wonders to kill distortion attributable to carrier troughs caused by rapid selective fading on shortwave. It can hold lock right down to the noise -- well beyond the point at which you'll be able to distinguish KSL's BYU play-by-play from the hiss. *And* its NE602 sync detector has sufficient headroom so modulation peaks don't get clipped.

Be sure to feed your radio's AGC detector (which can be just a diode) and synchronous detectors via different buffer amplifiers -- that is, don't just "Y" the AGC/audio-detector inputs. Otherwise, your sync detector will receive the IMD generated by the AGC diode.

Have fun!

73, Dave/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

367. Re: Synth for 15 to 20 MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 17:25:49 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Aug10.172549.27169@kocrsv01.delcoelect.com>
Source record: 119787

There have been some articles in some of the ham mags (I can't recall offhand which, but I read QST, CQ, and 73, so those are the ones to look at) in the past few months about Direct Digital Synthesizers (similar to recent ICOM rigs?) that can be done with a Harris (?) IC.

I believe the DDS described can operate upto about 20-25 MHz with very fine "steps".

--

James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

368. 6m xcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 17:35:02 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Aug10.173502.9060@news.unomaha.edu>
Source record: 119784

Does anybody out there have or know of plans for a homebrew 6m xcvr? I'm waiting for my license and I figure that by the time the FCC gets it to me, I could have the 6m rig up and ready. Any and all replies welcome.

73's

Michael

--

| Michael Fortner * "I've got all this love to give and |
| N0??? (11 weeks and counting) * so far all I have is my ham radio" |
| ncc2001@cwis.unomaha.edu * -Selma Bouvier (Marge's sister) |

369. Looking for Yaesu FT-736 Schematic

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-10 20:57:47 UTC
From: segrest@bobseg.enet.dec.com
Message-ID: <1993Aug10.205747.8214@nntpd2.cxo.dec.com>
Source record: 119785

A while back someone suggested that I use an off the shelf IF filter for a RCA-700 radio project that I was asking about. As a result I am now the proud owner of several "LHS-20" 20kc wide filters made by Yaesu for the FT-736.

Is there any chance that anyone can help me locate the pinouts for these devices?

Looking from the bottom the pins look something like:

```
X
X X X X
```

How about checking your schematic and tell me which pin is which....?

--
Bob Segrest, KD4PWU
segrest@bobseg.enet.dec.com

370. HF Active Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 01:30:13 UTC
From: yuan@phoenix.princeton.edu
Message-ID: <1993Aug11.013013.25330@Princeton.EDU>
Source record: 119786

I am a bit of a armchair homebrewer (I theorize and plan more projects
than I actually build), thus in theorizing I began to wonder why high
frequency active bandpass filters are seldom seen. One could build a
highly selective receiver front end using several very low noise wide
bandwidth op amps (such as the Comlinear CLC425 or the Harris HFA-0002,
both of which have an ~1 Ghz bandwidth and are extremely low noise).
This theoretical bandpass filter could have a Q between 10 to 30, and
using varactors, D/A converters, and digitally adjustable potentiometers,
one could have an adjustable bandpass from 1 to 30 mhz for example. Am I
far off base? (I am not an E.E. by training). I realize this is not the
most economical approach to building a bandpass filter.

Jeffrey Yuan, N2NXC

****
* Jeffrey Yuan *
* Department of Molecular Biology *
* Lewis Thomas Laboratory *
* Princeton University *
* Princeton, NJ 08544 yuan@phoenix.princeton.edu *
****

371. Re: HF Active Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 13:29:31 UTC
From: dbraun@ilx049.intel.com
Message-ID: <24as7r$1d1m@ilx018.intel.com>
Source record: 119788

In article <1993Aug11.013013.25330@Princeton.EDU>, yuan@phoenix.princeton.edu (Jeffrey Yuan) writes:
|> I am a bit of a armchair homebrewer (I theorize and plan more projects
|> than I actually build), thus in theorizing I began to wonder why high
|> frequency active bandpass filters are seldom seen. One could build a
|> highly selective receiver front end using several very low noise wide
|> bandwidth op amps (such as the Comlinear CLC425 or the Harris HFA-0002,
|> both of which have an ~1 Ghz bandwidth and are extremely low noise).
|> This theoretical bandpass filter could have a Q between 10 to 30, and
|> using varactors, D/A converters, and digitally adjustable potentiometers,
|> one could have an adjustable bandpass from 1 to 30 mhz for example. Am I
|> far off base? (I am not an E.E. by training). I realize this is not the
|> most economical approach to building a bandpass filter.

I suspect that at HF frequencies, the component (R,C)
values would be unrealisticly small, and parasitics
would mess everything up. But if everything was on
one chip, maybe it would work, at least for a 455kHZ IF.

I noticed that cellular phones use ceramic SAW (surface acoustic wave)
filters in their front end (at ~900 MHz). These little babies
are about a quarter-inch on a side, surface-mount, and can apparently
be designed for a large range of bandwidths. Do any ham-band radios use
these? They could be very handy for homebrewing!

--
Doug Braun

Email: dbraun@inside.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC1-41
Matam Scientific Center
Haifa, Israel 31015
---

372. Re: Synth for 15 to 20 MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 13:32:25 UTC
From: dbraun@ilx049.intel.com
Message-ID: <24asd9$1d1m@ilx018.intel.com>
Source record: 119789

How exactly do "direct" synthesizers differ from the
usual VCO-divider-PLL setup?

Is it the process where you mix together a lot of combinations
of crystal-controlled frequencies to get what you want?
Doesn't that approach take lots of mixers, filters, etc. that
don't lend themselves to VLSI implementation?

--
Doug Braun

Email: dbraun@inside.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC1-41
Matam Scientific Center
Haifa, Israel 31015
---

373. Sweep generator plans..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 15:43:11 UTC
From: andyw@aspen32.cray.com
Message-ID: <1993Aug11.104311.7519@hemlock.cray.com>
Source record: 119790

I'd like to build a sweep generator, to help me align & evaluate
the IF stages of receivers. Does anyone have any recommendations
for plans ? I think 10.7MHz & 455KHz would be ok, but if I could
get a variable 20-45 MHz output too, that would help me align
some commercial gear too.

I tried to find a good used generator, but I couldn't find any
that didn't cost and arm & a leg, so I figured it was time to
fire up the soldering iron..

--
andyw. N0REN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

374. Re: HF Active Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 16:56:52 UTC
From: rkarlqu@scd.hp.com
Message-ID: <24b8ck$4b2@hpscit.sc.hp.com>
Source record: 119791

In article <1993Aug11.013013.25330@princeton.edu>,
Jeffrey Yuan <yuan@phoenix.princeton.edu> wrote:
>frequency active bandpass filters are seldom seen. One could build a
>highly selective receiver front end using several very low noise wide
>bandwidth op amps (such as the Comlinear CLC425 or the Harris HFA-0002,
>both of which have an ~1 Ghz bandwidth and are extremely low noise).
>This theoretical bandpass filter could have a Q between 10 to 30, and
>using varactors, D/A converters, and digitally adjustable potentiometers,
>one could have an adjustable bandpass from 1 to 30 mhz for example. Am I
>far off base? (I am not an E.E. by training). I realize this is not the

Leaving out the question of why you wouldn't use a 25 cent inductor to
do the job, you would need to build these filters using "state-variable"
topology. This topology requires a *minimum* gain-BW product equal to:

center frequency * Q * 3.

(Don't bother with "simpler" topologies. They need MUCH more GBW).
With a Q of 10 at 30 MHz., you would need 900 MHz. GBW which is just
achievable. Unfortunately, the topology is such that the op-amps have
to be stable at a gain of +1, which is not the case for the ones you
cited, nor for any other ones that I know of with a GBW > 900 MHz.
You also cannot use current-feedback amplifiers.
Also, if you operate with just the minimum GBW product, there
will be severe interactions between the amplifier response and the filter
response, so you would have to use compensation techniques to fix this.

Rick N6RK
rkarlqu@scd.hp.com

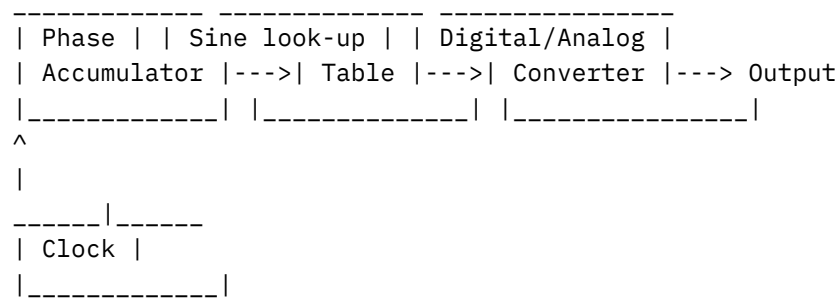
375. Re: Synth for 15 to 20 MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-11 20:19:04 UTC
From: alanb@sr.hp.com
Message-ID: <CBM33t.H7K@srgenprp.sr.hp.com>
Source record: 119792

Doug Braun (dbraun@ilx049.intel.com) wrote:
: How exactly do "direct" synthesizers differ from the
: usual VCO-divider-PLL setup?

: Is it the process where you mix together a lot of combinations
: of crystal-controlled frequencies to get what you want?

No. DDS generates the output sinewave directly with a DAC. By using
a clock frequency higher than the highest desired output frequency,
you can generate a sinewave at any frequency in the range.



The phase accumulator counts modulo 360 degrees, keeping track of the
phase to many more bits of resolution than the sine look-up table or
the DAC. Once per clock cycle, the accumulated phase is rounded off
to the proper resolution for the look-up table, and the proper DAC
number (possibly interpolated between table points) is loaded.

The advantage of the method is you tend to get much better frequency
resolution than with a phase-locked loop. Resolution is limited only by
the the size of the phase accumulator. The disadvantage is the limited
frequency range, which is limited by the speed of the DSP or dedicated
hardware used to do all the above functions.

AL N1AL

376. Re: Cubic Incher

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 03:04:03 UTC
From: TRAVISJR@ctrvax.Vanderbilt.Edu
Message-ID: <1993Aug12.030403.12869@news.vanderbilt.edu>
Source record: 119793

There was a cubic incher at '92 and '93 Dayton Hamventions.
British G-QRP group had it on display at booth, a member's project, I
believe. Don't recall a kit being offered.

It was either a transmitter or xcvr made of surface mount devices on
cubic inch of pc boards soldered together. May have had a small
hand capacitance keyer on top - cleverly and neatly done work.

I seem to have seen a piece on it in G-QRP's SPRAT but do not find it
among the several issues on hand, nor in QRP Quarterly.

Others may have a reference.

Blue Rose Electronics might have something along this line..
they specialize in SMD kits and parts
538 Liverpool Rd, Great Sankey,
Warrington, Cheshire, England WA5 3LU

And Kanga U-S, pretty much a one person operation, distributes
some of G-QRP members' creations in the US.
Bill Kelsey N8ET 3521 Spring Lake Dr Findlay OH, 45840
(419) 423-5643. 7-11 pm est

He may know of the cubic incher's availability, though I do not see it
in his product handout from the '92 hamvention.

Good luck,

73

Jim Travis AC4JI

377. 2-6 meter Transverter?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 04:32:23 UTC
From: pmstuckey@ualr.edu
Message-ID: <1993Aug11.223223.1@ualr.edu>
Source record: 119795

Hey Brewers,

I am seriously thnking of building the 2 meter to 6 meter transverter
listed in the Feb 1993 edition of "73 Amatuer Radio Today. It is found
on page 26. The article is called "The simplest transvereter."
Question is... Has anyone built this verter and if so how well
does it work? The author says that it is a little noisy but I guess
I don't understand what a little means. Are we talking OBNOXIOUS or
a little back ground hisssss? Also any tips on building and testing
would be appreciated. Thanks in Advance.

****
* KB5WCE *
* Peter Stuckey *
* Vice President, Univ. Ark. Little Rock Ham Radio Club *
* Internet: "PMSTUCKEY@UALR.EDU" OR "HAM%EIVAX@UALR.EDU" *
****

378. Re: Cubic Incher - II

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 04:42:32 UTC
From: TRAVISJR@ctrvax.Vanderbilt.Edu
Message-ID: <1993Aug12.044232.14448@news.vanderbilt.edu>
Source record: 119794

More on Cubic Incher...

ARRL Handbooks (Chapter 30) since at least 1989, maybe further back, have a "Cubic Incher for 80, 40 and 30 meters."

Based on articles in QST, July, 1982 and Sep, 1990 from designs and circuits by Monticelli AE6C, Bonaguide WA1VUG and DeMaw, W1FB.

Doesn't look very cubic but it is small - a xtal oscillator transmitter with harmonic filter at output (as described in '93 book).

About 1.75W out with 14v and works OK down to 8 volts, according to the handbook.

Looks like fun.

Jim Travis, AC4JI

379. Re: Synth for 15 to 20 MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 06:48:36 UTC
From: cpuig@infoserv.com
Message-ID: <930811.224836.5v6.rusnews.w165w@cpuig.infoserv.com>
Source record: 119797

alanb@sr.hp.com (Alan Bloom) writes:

> No. DDS generates the output sinewave directly with a DAC. By using
> a clock frequency higher than the highest desired output frequency,
> you can generate a sinewave at any frequency in the range.
>

[Very nice explanation deleted]

> the the size of the phase accumulator. The disadvantage is the limited
> frequency range, which is limited by the speed of the DSP or dedicated
> hardware used to do all the above functions.
>

Actually, the frequency range can be relatively large. Single-chip
CMOS DDS devices (some incorporating dual DDSs) top out at around
80 MHz, but more expensive ECL and GaAs devices can operate at up
to 1 GHz. Note that these frequencies are the maximum clock frequencies.
The maximum output frequency is about 40% of the clock.

The main disadvantage of DDSs is their lack of spectral purity. The
output typically contains spurs at much higher levels than either
crystal (no spurs) or well-designed PLL synthesizers (limited spurs).
Some of these spectral components arise from the quantization noise
and aliasing inherent in DSP systems, but in general the spectral
purity is limited by the DAC. Small imperfections in DAC performance
can produce very noticeable garbage in the output.

One can have the best of both worlds by using the DDS to generate
a very fine resolution variable reference for a simple PLL, using
the PLL effectively as a filter to get rid of the spurs. The PLL
can also shift the frequency range of the DDS to expand the overall
frequency coverage.

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

380. Cubic Incher Source

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 07:12:12 UTC
From: algol@stein.u.washington.edu
Message-ID: <24cqgc$gnn@news.u.washington.edu>
Source record: 119796

I understand that Danny Stevig is selling Cubic Incher Kits for $12.50. If you are a homebrewer you really ought to give this guy a try -- very reasonable prices, excellent service, a nice guy, and all kinds of great stuff. (I've placed 2 big orders with him and been very happy both times).

Dan's Small Parts an d Kits
1935 S. 3rd W. #1
Missoula, MT 59801
(406) 543-2872

I think he asks a dollar for his catalog, or was it just an SASE? I can't find his add in this month's QST...

381. Help/Advice

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 13:23:18 UTC
From: steve@hpcpbla.bri.hp.com
Message-ID: <24dg86$aa4@hpscit.sc.hp.com>
Source record: 119798

Anybody have any ideas about how I could modify a push-to-talk (PTT) FM transciever for continuous 2-way operation i.e no need to PTT ?

The set I have is a realistic TRC-500 operating at 49.830 Mhz. Each tranciever contains an xtal based tx and dual-conversion receiver (1st IF 10.7 Mhz, 2nd 455 Khz). The specs from the operating manual are ->

Reciever

Sensitivity (20 dB quieting) 0.5 uV
Sensitivity (Threshold) 0.5 uV
Modulation acceptance BW +/- 7 Khz
Spurious/image rejection 20 dB min.
Freq. stability 0-40 C +/- 2Khz max.

Transmitter

RF 10,000 uV/m @ 3m
Spurious/harmonic 54 dB max
FM hum/noise 40 dB min
Audio distortion 10% max
Freq. stability 0-40 C +/- 2Khz max.

By swapping tranciever xtals I can create 2 separate transmit/ receive channels. Bypass the PTT to permanently enable the tx and hey presto .. problem solved (or just beginning ?). Is this a feasible method ?? How can I improve the selectivity or the transciever receiver so that it provides adequate rejection of it`s own tx ??

Perhaps I`m wasting my time with this transciever .. if so any ideas about how I might implement a non-PTT 2 way radio voice channel as simple/low-cost as possible ??

any help/advice would be most welcome,

Steve

382. Re: Cubic Incher

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-12 20:22:22 UTC
From: kelsey@csn.org
Message-ID: <CBnxxB.CDK@csn.org>
Source record: 119799

TRAVISJR@ctrvax.Vanderbilt.Edu wrote:
: There was a cubic incher at '92 and '93 Dayton Hamventions.
: British G-QRP group had it on display at booth, a member's project, I
: believe. Don't recall a kit being offered.

: It was either a transmitter or xcvr made of surface mount devices on
: cubic inch of pc boards soldered together. May have had a small
: hand capacitance keyer on top - cleverly and neatly done work.

: I seem to have seen a piece on it in G-QRP's SPRAT but do not find it
: among the several issues on hand, nor in QRP Quarterly.

: Others may have a reference.

: Blue Rose Electronics might have something along this line..
: they specialize in SMD kits and parts
: 538 Liverpool Rd, Great Sankey,
: Warrington, Cheshire, England WA5 3LU

: And Kanga U-S, pretty much a one person operation, distributes
: some of G-QRP members' creations in the US.
: Bill Kelsey N8ET 3521 Spring Lake Dr Findlay OH, 45840
: (419) 423-5643. 7-11 pm est

: He may know of the cubic incher's availability, though I do not see it
: in his product handout from the '92 hamvention.

: Good luck,

: 73

: Jim Travis AC4JI
:
The items displayed at the G-QRP Booth the last few years at Dayton have
been the "ONER" series of kits - all on 1" square pc boards. TX, RX, VFO,
QSK, and low pass filter (not 1" square, but about 1 square inch total board
size) make up the "ONER" series. The small unit referred to above was a 2
band xcvr built by one of the members of the G-QRP club, and was never
produced as a kit that I am aware of. It was two bands, including a keyer
and ATU..... Not easily duplicated !
The ONER, although on 1" square boards, would be dificult to put in a 1
cubic inch box.
The CUBIC INCHER is described elsewhere in this newsgroup, and is not a
Kanga kit. Dan's kit is the first version of it in kit form I think.
The info on Kanga US above is correct.....

73/72 - Bill - N8ET

383. Spanner wrench needed for recessed BNC connectors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 13:35:16 UTC
From: moisan@bronze.lcs.mit.edu
Message-ID: <24g5ak$sak@bronze.lcs.mit.edu>
Source record: 119800
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like most (if not all) HT's, this one has a recessed BNC connector with a retaining ring that needs to be unscrewed before I can take the cover off. I need a spanner wrench to do this right, and I haven't found one. Anyone have an idea? I'd like to get this over and done with very soon before my friend loses patience.

Thanks and 73's, Dave, N1KGH

--
| David Moisan, N1KGH /^_/^\ moisan@silver.lcs.mit.edu |
| 86 Essex St. Apt #204 (o ^ o) n1kgh@amsat.org |
| Salem. MA 01970-5225 | | ce393@cleveland.freenet.edu |
| |

384. Re: Spanner wrench needed for recessed BNC connectors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 15:01:42 UTC
From: schuster@panix.com
Message-ID: <24gacm$h8f@panix.com>
Source record: 119801

In article <24g5ak$sak@bronze.lcs.mit.edu>,
David Moisan <moisan@bronze.lcs.mit.edu> wrote:
>I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like
>most (if not all) HT's, this one has a recessed BNC connector with a
>retaining ring that needs to be unscrewed before I can take the cover off.
>I need a spanner wrench to do this right, and I haven't found one.
>Anyone have an idea? I'd like to get this over and done with very
>soon before my friend loses patience.

I could swear I saw one in the Techni-Tool catalog recently, but it's
at home right now and I am not ...

--
Mike Schuster | schuster@panix.com | 70346.1745@CompuServe.COM
------------------- | schuster@shell.portal.com | GEnie: MSCHUSTER

385. PSU power factor correction

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 16:42:43 UTC
From: ali@ukc.ac.uk
Message-ID: <5569@eagle.ukc.ac.uk>
Source record: 119802
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I have a ham radio amplifier (DenTron DRT2000L) with a power supply in the 1 to 2KW region. With 240V mains, the transformer magnetising current is 1A rms (90 degrees out of phase with the voltage, measured with a clamp-type current transformer and scope). The full-load current is around 10A, though it is hard to give a meaningful value because the diodes/capacitors on the secondary distort the waveform.

First question: is this value of magnetising current `reasonable'? 10% of the full-load value seems a lot to me.

Second question: can I add a `motor run' type of capacitor in parallel with the transformer primary to tune out the inductance and save on the electricity bill? Are there bad side effects when 2 KW pulses are drawn from the secondary as I shout into the microphone or key morse code?

Alan G3XAQ

386. 10 Gig antennas

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 16:56:29 UTC
From: mac20@cunixf.cc.columbia.edu
Message-ID: <24gh3t$pnc@apakabar.cc.columbia.edu>
Source record: 119803

10 Gig parabolic dishes are hard to come across (for a hobbiest's
money) and constructing one is rather difficult.
I know there's a type of dish out there that uses azimuthal concentric rings
that seems like it would be easier to construct.
Can someone tell me the name of this type of antenna and how
it stacks up compared to the same size diameter parabolic dish?
perhaps a reference or two would be helpful.

As a source of the parabolic shape i thought of using one of those simple
security or driveway type parabolic mirrors, preferably just shiny
stainless or aluminum. Has anyone done something like this?

Thanks,
Mike
KF2NV
Applied Physics Department
Columbia University

387. Re: 10 Gig antennas

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 18:02:34 UTC
From: glenne@sad.hp.com
Message-ID: <CBpM4C.H2F@srgenprp.sr.hp.com>
Source record: 119804

Michael A Cecere (mac20@cunixf.cc.columbia.edu) wrote:

: As a source of the parabolic shape i thought of using one of those simple
: security or driveway type parabolic mirrors, preferably just shiny
: stainless or aluminum. Has anyone done something like this?

Mike

I haven't tried those but if it works well optically it's pretty sure to
work at 10 GHz. However, watch out that the F/D is approriate and within
the range of the feedhorn you use.

As far as I know, the small solid spun dishes are still available and
only somewhat more expensive than $1/inch.
See either the Dec '89 HR article or the Handbook for mounting and feed
details.

I think that

The Antenna Center
505 Oak Street
Calumet, Michigan 49913
906.337.5062

still works. It seems like someone told me they had recently gotten some
antennas from them.

73
Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

388. RE: 10 Gig antennas

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 18:51:59 UTC
From: wade@kali.enet.dec.com
Message-ID: <24gnsfINNl4i@usenet.pa.dec.com>
Source record: 119806

>Article 428 of rec.radio.amateur.homebrew:
>Subject: 10 Gig antennas

>10 Gig parabolic dishes are hard to come across (for a hobbiest's
>money) and constructing one is rather difficult.

well $29 for a 2 foot dish from Satellite City might be a lot...

>I know there's a type of dish out there that uses azimuthal concentric rings
>that seems like it would be easier to construct.
>Can someone tell me the name of this type of antenna and how
>it stacks up compared to the same size diameter parabolic dish?
>perhaps a reference or two would be helpful.
>
>As a source of the parabolic shape i thought of using one of those simple
>security or driveway type parabolic mirrors, preferably just shiny
>stainless or aluminum. Has anyone done something like this?
>
They might work, if the surface is parabolic to within about 1 mm.

some other ideas:

1. Horns are easy to make. I wrote a small program that generates a
PostScript template for horns with gain between 10 and 25 dB. tape
the template to sheet metal, cut it out, and fold it up.

2. Lens antennas are fairly easy to make, using Styrofoam and aluminum
foil. The lens goes in front of a horn for additional gain.

3. The cover of a 100 pound propane tank is an almost perfect parabola,
14 inches in diameter with f/d = 0.6. N1IOL and friends have molded
several dishes from a lid liberated from a tank.

We have used all of these successfully in past 10GHz contests for contacts
in excess of 100 km., and will be out again next weekend (Aug 21-22).

>Thanks,
>Mike
>KF2NV
>Applied Physics Department
>Columbia University

send mail for details on any of the above.

paul N1BWT

389. Re: PSU power factor correction

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 19:41:06 UTC
From: alanb@sr.hp.com
Message-ID: <CBpqoJ.JEn@srgenprp.sr.hp.com>
Source record: 119805
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

A.L.Ibbetson (ali@ukc.ac.uk) wrote:
: I have a ham radio amplifier (DenTron DRT2000L) with a power supply in
: the 1 to 2KW region. With 240V mains, the transformer magnetising
: current is 1A rms (90 degrees out of phase with the voltage, measured
: with a clamp-type current transformer and scope). The full-load
: current is around 10A, though it is hard to give a meaningful value
: because the diodes/capacitors on the secondary distort the waveform.

: First question: is this value of magnetising current `reasonable'?
: 10% of the full-load value seems a lot to me.

Is the filament winding on the same transformer? That could account for
some of the current. Otherwise I agree 1A seems a bit high.

: Second question: can I add a `motor run' type of capacitor in parallel
: with the transformer primary to tune out the inductance and save on the
: electricity bill?

I don't think it would have much effect on the electricity bill. My
understanding is that the electric company's power meter responds to
true load power (watts), taking power factor into account.

: Are there bad side effects when 2 KW pulses are drawn from the secondary
: as I shout into the microphone or key morse code?

Assuming your branch circuit is rated for the peak current, I don't
see any problem. Be aware that 2 kW delivered to the load (tube)
will require much more than 2 kilovolt-amperes drawn from the primary.
Some of this is due to transformer efficiency, but the main problem
is power factor. In this case, "power factor" does not refer to a
phase difference between voltage and current (caused by an inductive
load, for example). Rather, it is caused by the fact that the current
drawn from the primary is not sinusoidal. With a capacitor-input filter,
the current flows in short pulses at the peaks of the voltage waveform.
Average E times I (volt-amperes) is much higher than the output power.

Since fuses and circuit breakers respond to RMS current (not power),
the circuit must be rated for much higher current than would be
expected from the load power. For example, an amplifier that runs
2 kW input power might draw 2.4 kW from the 240V supply, which would
imply 10 amps. However in practice, a 20A breaker is marginal --
a 30A circuit is normally recommended.

Some switching power supplies these days include "power factor correction"
circuitry which forces the input current to be approximately sinusoidal.
What ham manufacturer will be the first to include this in their high-

power amplifiers?

AL N1AL

390. Re: Spanner wrench needed for recessed BNC connectors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-13 20:41:55 UTC
From: mcovingt@aisun1.ai.uga.edu
Message-ID: <24guaj$6qp@hobbes.cc.uga.edu>
Source record: 119807

If you mean a wrench like an optical spanner, try any camera store that
can special-order Kalt accessories. Or try the ads in Shutterbug.
Or try the Edmund Scientific catalog.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

391. Re: PSU power factor correction

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-14 00:59:28 UTC
From: thoman@helios.tcad.ee.ufl.edu
Message-ID: <24hddg$cuv@bigguy.eng.ufl.edu>
Source record: 119808
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <5569@eagle.ukc.ac.uk>, ali@ukc.ac.uk (A.L.Ibbetson) writes:
|> I have a ham radio amplifier (DenTron DRT2000L) with a power supply in
|> the 1 to 2KW region. With 240V mains, the transformer magnetising
|> current is 1A rms (90 degrees out of phase with the voltage, measured
|> with a clamp-type current transformer and scope). The full-load
|> current is around 10A, though it is hard to give a meaningful value
|> because the diodes/capacitors on the secondary distort the waveform.
|>
|> First question: is this value of magnetising current `reasonable'?
|> 10% of the full-load value seems a lot to me.

Well, it isn't unreasonable. Naturally, you'd like it to be
as small as possible.

|> Second question: can I add a `motor run' type of capacitor in parallel
|> with the transformer primary to tune out the inductance and save on the
|> electricity bill? Are there bad side effects when 2 KW pulses are
|> drawn from the secondary as I shout into the microphone or key morse
|> code?

First, it won't save you anything on your electric bill, since
the typical residential power meter measures watts, not VAR's (your
power meter will register the transformer's core loss, but you can't
do anything about that unless you find a more efficient transformer).
Also, if you hang a capacitor on the primary you'll be creating
a dual-tank circuit involving power line impedance, transformer
leakage inductance, and the capacitor. This may yield undesirable
(and at your power levels, potentially damaging) oscillation when
excited. Unfortunately, I know enough to see the hazard, but not
enough to tell you how to circumvent it...
Next Respondent?

Greg Thoman: The opinions expressed herein are mine alone, and I am
solely irresponsible for them.

392. Re: 10 Gig antennas

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-14 17:54:25 UTC
From: die@pig.UUCP
Message-ID: <1202@pig.UUCP>
Source record: 119809

In article <24gh3t$pnc@apakabar.cc.columbia.edu> mac20@cunixf.cc.columbia.edu (Michael A Cecere) writes:
>10 Gig parabolic dishes are hard to come across (for a hobbiest's
>money) and constructing one is rather difficult.

That is a surprising statement to me. There are lots of used satellite dishes around for Ku band which would do just fine at the lower 10.6 Ghz amateur allocation. Many Ku band satcom dishes are offset feed types (to allow the dish to be vertical to reduce snow problems and keep the feed shadowing down to a minimum) but this should not be a problem for 10 gig ham use. Ku band satellite dishes are available ranging in size from about 18 inches to more than 10 feet with most being in the 24 inch to 48 inch range.

These dishes are used for VSAT terminals both 1 way and 2 way (2 way usually requires somewhat larger dish to meet FCC beam specs) and can be found on the roofs of commercial buildings (seems like around here there are more commercial buildings with them than without). Companies go out of business or move and the dishes are often left (I've seen many abandoned car dealerships in the recent severe recession around here with their dishes intact). I would suggest contacting someone who manages commercial real estate or a company that installs and services VSAT systems (most home TVRO dealers don't have any connection with this business) and simply asking if they have some used Ku dishes you could buy. These things show up a ham flea markets too...

And even new Ku band VSAT dishes (just the dish, not the electronics or LNB) are only around a hundred or so dollars complete with Japanese or Tiawanese instructions. These things are not expensive rare items but something very common and installed in the hundreds of thousands.

I might also add that Ku band satcom rf hardware can often be modified to tune the 10.6 ghz ham band with somewhat reduced performance but still much better performance than something homebrewed by someone without good microwave test gear (lots of $$$$$). I have seen VSAT rf front ends at flea markets with 10-15 watt SSPAs at 14 ghz that can be modified to give more than a couple of watts solid state power at 10.6. And many Ku LNB's do not have a whole lot of rf amp selectivity and can be made to work at 10.6 with reduced noise performance and gain.

393. Ramsey modification to FM-10 stereo transmitter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-14 23:50:42 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24jtoi$1hf@hobbes.cc.uga.edu>
Source record: 119810
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,alt.radio.pirate

Ramsey has released a modification kit for the FM-10 which puts in a
38-kHz crystal in place of the original RC timing network for the 38-kHz
oscillator.

They say that with recent production runs of the BA1404, the RC network
no longer produces the correct _phasing_ of the 38-kHz signal, even though
the frequency is correct (when properly adjusted).

The symptom is poor stereo separation. The kit cures it.

They gave me my mod. kit free, but I don't know if that is the general
policy.
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

394. What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-14 23:52:19 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24jtrj$1hi@hobbes.cc.uga.edu>
Source record: 119811
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I'm getting ready to do some free-lance designing, and would like to start
a discussion...

What kind of kits would you like to see offered by companies like Ramsey
and others in the under-$40-per-kit class?

What kinds of construction projects would you like to see featured in
magazine articles?

Suggestions, comments, free-for-alls invited...
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

395. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-15 02:02:14 UTC
From: froncio@lessfilling.rutgers.edu
Message-ID: <Aug.14.22.02.14.1993.19260@lessfilling.rutgers.edu>
Source record: 119812
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
> I'm getting ready to do some free-lance designing, and would like to start
> a discussion...
>
> What kind of kits would you like to see offered by companies like Ramsey
> and others in the under-$40-per-kit class?
>
> What kinds of construction projects would you like to see featured in
> magazine articles?

I have a number of them - all of them pertain to autoracing. Ok,
maybe they'd cost just a trifle more than $40.00, but, here goes:

o a very small, lightweight data logger capable of logging
30,000 samples from several analog channels and downloading them
to a PC via RS-232 port

o a digital LCD instrument amp/display for any one of several interesting
on-board (car,horse, whatever...) sensors

o a timer/logger that detects an emitter's presence and logs the
lap-times of a racecar (either on-board or pit-side)

o a simple instrumentation amplifier that's reliable and properly
temperature-compensated

o an a-to-d plug-in board for a pc-clone and accompanying scope
software

o radio-control equipment for rc-toys

I'd just *love* to be able to buy these things for $40.00!

Cheers,

Andy
--
Andy Froncioni
froncio@caip.rutgers.edu

" Until the lions have their own historians,
tales of hunting always glorify the hunter..." Zulu proverb

396. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-15 11:00:24 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-745412421@unomaha.edu>
Source record: 119813
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
===========================

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

397. Harris DDS chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-16 13:07:00 UTC
From: OSYSMAS@MVS.OAC.UCLA.EDU
Message-ID: <199308161307l0OSYSMAS@MVS.OAC.UCLA.EDU>
Source record: 119815

Does anyone have a source (and price?) of the Harris DSP
chip and D/A chip used in the 73 DSP project?

398. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-16 14:47:21 UTC
From: mb@wpsun4.UUCP
Message-ID: <837@wpsun4.UUCP>
Source record: 119814
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
: I'm getting ready to do some free-lance designing, and would like to start
: a discussion...
:
: What kind of kits would you like to see...?
:
: What kinds of construction projects would you like to see...?

I'd like to see a 1-30 MHz DDS or DDS/PLL based VFO for direct-
conversion receiver use.

--Michael Bendio, WT7J

399. Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 06:00:17 UTC
From: szhall@bullwinkle.ucdavis.edu
Message-ID: <CBw3CI.46B@ucdavis.edu>
Source record: 119816

I understand that you can make a interface to be used for PC TO SEND MORSE CODE for very little money..Do u know someone who makes a kit for has the plans? This is for a solid state HF rig..hope u can help..tnx..Jeff N6MYF

400. Re: Harris DDS chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 12:03:09 UTC
From: sbrown@charon.dseg.ti.com
Message-ID: <SBROWN.93Aug17060309@charon.dseg.ti.com>
Source record: 119817

In article <19930816130710OSYSMAS@MVS.OAC.UCLA.EDU> OSYSMAS@MVS.OAC.UCLA.EDU (Michael Stein) writes:

> Does anyone have a source (and price?) of the Harris DSP
> chip and D/A chip used in the 73 DSP project?

Does this question mean that the Digikey numbers the author included in the article are no good or that Digikey cannot supply the chips? I haven't looked in the Digikey catalog. Just wondering.

TNX,

****
Steve Brown, WD5HCY	
sbrown@charon.dseg.ti.com	Simplicate
wd5hcy@wd5hcy.ampr.org	and add
[44.28.0.61]	lightness.
wd5hcy@kf5mg.#dfw.tx.usa.na	
****

401. Re: Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 13:16:05 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug17.131605.15906@ke4zv.uucp>
Source record: 119719

In article <CBw3CI.46B@ucdavis.edu> szhall@bullwinkle.ucdavis.edu () writes:
>
>I understand that you can make a interface to be used for PC TO SEND MORSE
>CODE for very little money..Do u know someone who makes a kit for has the
>plans? This is for a solid state HF rig..hope u can help..tnx..Jeff N6MYF

All you need is a keying transistor tied either to B0 of a parallel port, or to DTR of a serial port. You can then write software to toggle the appropriate pin high or low to key the transmitter. Most solid state rigs want a closure to ground to key, so an NPN transistor would be in order for the printer port. This port on an IBM clone comes directly off the parallel latch and shouldn't be allowed to source more than 1.6 ma. You may want to use a Darlington pair for the switch. The serial port's DTR is going to swing between +/- 12 volts. You can use a diode clamp on the base of the switching transistor to prevent damage during the - 12 volt periods.

Alternately, you can use an optoisolator such as the H111 as the keying switch. This will protect the computer from stray voltages that may try to wander back from the radio.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

402. Re: Harris DDS chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 14:11:58 UTC
From: davidc@lsid.hp.com
Message-ID: <CBwq3y.HFn@hpcvsnz.cv.hp.com>
Source record: 119718

Steve Brown (sbrown@charon.dseg.ti.com) wrote:
: In article <19930816130710OSYSMAS@MVS.OAC.UCLA.EDU> OSYSMAS@MVS.OAC.UCLA.EDU (Michael Stein) writes:

: > Does anyone have a source (and price?) of the Harris DSP
: > chip and D/A chip used in the 73 DSP project?

: Does this question mean that the Digikey numbers the author included
: in the article are no good or that Digikey cannot supply the chips?
: I haven't looked in the Digikey catalog. Just wondering.

: TNX,
: **
: | Steve Brown, WD5HCY | |
: | sbrown@charon.dseg.ti.com | Simplicate |
: | wd5hcy@wd5hcy.ampr.org | and add |
: | [44.28.0.61] | lightness. |
: | wd5hcy@kf5mg.#dfw.tx.usa.na | |
: **

It sure wasn't listed in my Digi-Key catalog and I have the most recent copy too.

Dave, KB7QCL

403. Re: Harris DDS chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 14:21:03 UTC
From: mb@wpsun4.UUCP
Message-ID: <839@wpsun4.UUCP>
Source record: 119720

OSYSMAS@MVS.OAC.UCLA.EDU (Michael Stein) writes:
: Does anyone have a source (and price?) of the Harris DSP
: chip and D/A chip used in the 73 DSP project?

You can get these through Wyle Labs for about $25 for the
DDS chip and about $15 for the DAC.

--Michael Bendio, WT7J
mb@titan.wordperfect.com

404. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 15:17:53 UTC
From: adair@dbsoftware.com
Message-ID: <1993Aug17.151753.33682@dbsoftware.com>
Source record: 119722
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
: I'm getting ready to do some free-lance designing, and would like to start
: a discussion...
:
: What kind of kits would you like to see offered by companies like Ramsey
: and others in the under-$40-per-kit class?
:
: What kinds of construction projects would you like to see featured in
: magazine articles?
:

I look forward to this kind of stuff....

My suggestions are:

- SWR Meter UHF & VHF
- Auto ID for Remote base feature of dual band radios
- Cordless phone/HF rig interface (probably > $40)

I can think of more...

--

Owen Adair WD4FSU adair@dbsoftware.com
D&B Software ...backbone!uupsi5!atldbs!adair (404) 239-3690
There is an alarming increase of topics I know nothing about.

405. Re: Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 15:46:30 UTC
From: mtracy@arrl.org
Message-ID: <2069@arrl.org>
Source record: 119721

The ARRL Field Services BBS has a shareware program called HAMCOM21.ZIP
that serves as a terminal program for use with a very simple circuit.
The diagram of this circuit is contained in the program's online help.
The FSD BBS can be reached at: (203) 666-0578. The terminal settings are
the standard 8 bits, No parity, 1 stop bit (8N1) with baud rates up to 9600.

406. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 17:29:52 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Aug17.172952.1101@news.unomaha.edu>
Source record: 119723
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I would not mind seeing some 6m transmitters/recievers. Most of the projects
you see in the ham mags are for hf work.

my $0.02 worth

73's

--
--
| Michael Fortner * "I've got all this love to give and |
| N0Y?? (12 weeks and counting) * so far all I have is my ham radio" |
| ncc2001@cwis.unomaha.edu * -Selma Bouvier (Marge's sister) |

407. Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 18:32:27 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24r87r$462@hobbes.cc.uga.edu>
Source record: 119724
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24po7c$ou8@senator-bedfellow.MIT.EDU> cthomas@athena.mit.edu (Michael T Ford) writes:

>of core and is an FPC. Vacuum tubes are interesting, but in today's
>world, it's hard to put them to use, let alone find them commonly.
>There still seem to be a lot of places to locate a tube, but a lot of
>them have become discontinued and aren't findable.

Here's a challenge.

One particular byway of electronic history that intrigues me is
low-voltage vacuum tubes -- that is, tubes that operate off a single
12-volt supply. They were introduced (for car radios) around 1958 and
became obsolete around 1960 when good RF transistors became affordable.
So they're an almost-forgotten chapter of history.

My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
available from Antique Electronic Supply, Tempe, Arizona, and at
hamfests. The 12U7 (not 12AU7) dual triode is one of the most useful;
they also had a pentagrid converter and a few other things.
In a pinch, a 12AT7 will substitute for a 12U7 and work OK in
some low-voltage tube circuits.

Any takers?

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

408. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-17 18:56:26 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <24r9kqINNksb@rave.larc.nasa.gov>
Source record: 119725
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24r87r$462@hobbes.cc.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>
>One particular byway of electronic history that intrigues me is
>low-voltage vacuum tubes -- that is, tubes that operate off a single
>12-volt supply. They were introduced (for car radios) around 1958 and
>became obsolete around 1960 when good RF transistors became affordable.
>So they're an almost-forgotten chapter of history.
>
>My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
>available from Antique Electronic Supply, Tempe, Arizona, and at
>hamfests. The 12U7 (not 12AU7) dual triode is one of the most useful;
>they also had a pentagrid converter and a few other things.
>In a pinch, a 12AT7 will substitute for a 12U7 and work OK in
>some low-voltage tube circuits.

Actually, I played with these a while back, attempting to use some for audio work, and found them to be a real pain. You might want to look at the R-392 receiver, which uses 28V exclusively, for filaments and plates, and actually does a respectable job of it.

These days, they aren't worth the trouble, since you can buy little power supply bricks intended for vacuum fluorescent displays. In a cubic inch you can get 15 mA at 200V, plenty of current to run a couple of 12AX7s or a bunch of nuvistors. If you're doing portable tube gear (which I am), they are recommended.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

409. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 01:05:10 UTC
From: jones@San-Jose.ate.slb.com
Message-ID: <24rv86$392@k2.San-Jose.ate.slb.com>
Source record: 119728
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
: I'm getting ready to do some free-lance designing, and would like to start
: a discussion...

: What kind of kits would you like to see offered by companies like Ramsey
: and others in the under-$40-per-kit class?

: What kinds of construction projects would you like to see featured in
: magazine articles?

: Suggestions, comments, free-for-alls invited...
: --
: :- Michael A. Covington, Associate Research Scientist : *****
: :- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
: :- The University of Georgia phone 706 542-0358 : * * *
: :- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

Well, these two items might come in a tad over $40 each, but I excpect not a
lot over $40:

o A DTMF keypad that could be added to the Ramsey VHF/UHF transcievers

o A CTCSS encoder AND decoder that could be added to the same radios
(preferably with a way of "following" the frequency switch selection)
The ability to use "split" CTCSS frequencies would be nice, too
(we've got one repeater here that has problems with it's own output
getting back into the reciever as part of the intermod, and having
the same CTCSS on both input and output sure doesn't help that. I'm
a real fan of tone-squelch, too.) (Yes, there is a board on the
market [HRO sells it] that does CTCSS encode/decode, but I like to
use my soldering iron!)

--
Disclaimer: The opinions expressed above are mine and not those of Schlumberger
because they are NOT covered by the patent agreement!

Phone: (602) 345-3638 Internet: jones@sj.ate.slb.com
Packet: N7RPQ@K7BUC.AZ.USA.NA RF: N7RPQ
Snail: Clark Jones, Schlumberger Technologies, 7855 S. River Pkwy #116, Tempe,
AZ 85284-1825

410. Re: Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 02:09:29 UTC
From: n9ljx@en.ecn.purdue.edu
Message-ID: <1993Aug18.020929.24297@en.ecn.purdue.edu>
Source record: 119726

In article <2069@arrl.org> mtracy@arrl.org (Michael Tracy) writes:
>The ARRL Field Services BBS has a shareware program called HAMCOM21.ZIP
>that serves as a terminal program for use with a very simple circuit.
>The diagram of this circuit is contained in the program's online help.
>The FSD BBS can be reached at: (203) 666-0578. The terminal settings are
>the standard 8 bits, No parity, 1 stop bit (8N1) with baud rates up to 9600.

And to avoid the toll call, this software is available at your favorite FTP
sites. It does a good job with RTTY also!

--sas

--
Scott Stembaugh - N9LJX internet: n9ljx@ecn.purdue.edu
Operations Supervisor, ADPC phone: 317 494 7946
Purdue University
West Lafayette, IN 47907-1061

411. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 03:23:08 UTC
From: aa570@cleveland.Freenet.Edu
Message-ID: <24s7as$6gm@usenet.INS.CWRU.Edu>
Source record: 119727
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Those Low-voltage tubes were called Nuvistors. I still have 2-3 from
my early TV repair days.

412. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 05:21:01 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24se7t$e9v@hobbes.cc.uga.edu>
Source record: 119729
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24s7as$6gm@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>
>Those Low-voltage tubes were called Nuvistors. I still have 2-3 from
>my early TV repair days.

No, I remember the 60-volt Nuvistors (tubes the size and shape of a
metal-can transistor). I recently disassembled an RCA "New Vista"
color TV from circa 1968 that had them in it.

The low-voltage tubes I had in mind use a 12-volt plate supply.
12U7 (not 12AU7) is the one that comes to mind; at one time I made
a list of them. There were about a dozen.

They actually use a lower component count than conventional tubes,
because the cathode is always connected directly to ground.

They pass very little current, and the typical plate load resistor
is 100K. You also need a 2-meg grid leak resistor, typically. And the
grid should not have a low-resistance DC path to ground, because if it
does, the bias won't work (bias is derived from electrons accumulating
on the grid).

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

413. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 07:19:48 UTC
From: morris@ucunix.san.uc.edu
Message-ID: <24thak$iod@ucunix.san.uc.edu>
Source record: 119745
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Contrariwise, let me build on the discussion and ask about projects using those Compactron tubes I've pulled out of all those old TV sets I cannibalized when filling my junkbox...I've heard of a few articles in the ham magazines which made use of them, and have a couple of old photocopies running around, but I'd like to see/hear of some more. Would there be too much inter-section interference/intermodulation to be able to make a small-tube-count superhet rcvr and/or xmtr out of these?

Ted Morris, WB8VNV
morris@ucunix.san.uc.edu
Previously Politically-Incorrect Tag Line Has Been Removed.

414. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 10:56:51 UTC
From: petert@zikzak.apana.org.au
Message-ID: <24t1tj$ck6@zikzak.apana.org.au>
Source record: 119730
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

>mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>: I'm getting ready to do some free-lance designing, and would like to start
>: a discussion...
>:
>: What kind of kits would you like to see...?
>:
>: What kinds of construction projects would you like to see...?

How about readouts for car management systems, so that the
average person knows what is happening to his/her car.
Or is that a proprietry no no?

415. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 12:54:45 UTC
From: npstewar@eos.ncsu.edu
Message-ID: <1993Aug18.125445.14562@ncsu.edu>
Source record: 119732
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24r9kqINNksb@rave.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:
>In article <24r87r$462@hobbes.cc.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>>
>>One particular byway of electronic history that intrigues me is
>>low-voltage vacuum tubes -- that is, tubes that operate off a single
>>12-volt supply. They were introduced (for car radios) around 1958 and
>>became obsolete around 1960 when good RF transistors became affordable.
>>So they're an almost-forgotten chapter of history.
>>
>>My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
>>available from Antique Electronic Supply, Tempe, Arizona, and at
>>hamfests. The 12U7 (not 12AU7) dual triode is one of the most useful;
>>they also had a pentagrid converter and a few other things.
>>In a pinch, a 12AT7 will substitute for a 12U7 and work OK in
>>some low-voltage tube circuits.
>
>Actually, I played with these a while back, attempting to use some for
>audio work, and found them to be a real pain. You might want to look
>at the R-392 receiver, which uses 28V exclusively, for filaments and
>plates, and actually does a respectable job of it.
>
>These days, they aren't worth the trouble, since you can buy little
>power supply bricks intended for vacuum fluorescent displays. In
>a cubic inch you can get 15 mA at 200V, plenty of current to run a
>couple of 12AX7s or a bunch of nuvistors. If you're doing portable
>tube gear (which I am), they are recommended.

A few months back, Craig Anderton (who still sells all kinds of kits for musical instrument related projects) did a 12AX7 distortion box that ran the 12AX7 on 42V plate. The transformer secondary was only 12 V, but he used a hex cmos inverter (4049) and 5 1N4001 diodes for the voltage multiplier. Craig mentioned that the 12AX7 was very non-linear in that region, but that was kinda the goal, since it was a distortion box.

The vfd bricks sounds good, but to do a small amplifier, it sounds like maybe using three. You could use one for each half of a 12AU7 maybe and get 3-5 watts in a push pull arrangement. You'd still need a custom transformer though, unless someone else has a neat little trick. Given the size, you could afford the space of three. How much do these things cost, and where can you find them?

Nate

416. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 13:19:34 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <24ta97INNe2k@rave.larc.nasa.gov>
Source record: 119743
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24s7as$6gm@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>
>Those Low-voltage tubes were called Nuvistors. I still have 2-3 from
>my early TV repair days.

Nope, completely different devices. The Nuvistors (6CW4 and its big brothers) are little metal cans with a B+ in the 50V to 90V range. These things are actually useful! Very nice for VHF front ends (like TV tuners). Pretty good for portable audio gear, although they tend to be microphonic (only in one direction, though!). Great for instrumentation amplifiers and the like.
--scott
(who uses them in his RIAA phono preamp at home)
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

417. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 14:27:22 UTC
From: dnewkirk@arrl.org
Message-ID: <2072@arrl.org>
Source record: 119731
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In rec.radio.amateur.homebrew, mcovingt@aisun3.ai.uga.edu
(Michael Covington) writes:

[deletions]

>One particular byway of electronic history that intrigues me is
>low-voltage vacuum tubes -- that is, tubes that operate off a single
>12-volt supply. They were introduced (for car radios) around 1958 and
>became obsolete around 1960 when good RF transistors became affordable.
>So they're an almost-forgotten chapter of history.

Yes, it was amusing: Good RF transistors weren't out, but
designers couldn't get enough audio power outta tubes operating
at 12 V. So the low-V tubes ultimately drove big germanium audio
power transistors to wiggle the speaker. *QST*/the ARRL
Handbook had a mobile converter that used these tubes.

>My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
>available from Antique Electronic Supply, Tempe, Arizona, and at
>hamfests. The 12U7 (not 12AU7) dual triode is one of the most useful;
>they also had a pentagrid converter and a few other things.
>In a pinch, a 12AT7 will substitute for a 12U7 and work OK in
>some low-voltage tube circuits.
>
>Any takers?

Is fun. I mentioned them in *QST* Hints and Kinks sometime ago as
possible options to "solid-stating" Collins permeability tuned
oscillators.

On the home front, last November I easily achieved 38
kilomiles/watt on 40 meters with a 12EA6 crystal oscillator
running at 12.6 V on all elements. (*Easily* doesn't mean I'm
breaking my arm patting myself on the back; a low dipole and one
CQ did it.) The system was operating at about 8 milliwatts at the
antenna feedpoint.

Some of the "few other things" available in this tube range
include RF pentodes like 12EA6, 12EK6 and 12DZ6 (I forget which
are remote cutoff and which are sharp). Folks interested in
thermionic physics may get a kick out of some of the approaches
used to try to force useful audio power out of them
(space-charge-cathode tetrodes) and get reasonable AGC slope
(hexode or heptode RF/IF amplifiers).

These tubes are tricky in the sense that they're "contact potential" biased (no cathode resistor, big [megohms] grid resistor) -- and contact potential is a somewhat slidy, tube-to-tube-variable characteristic. But, for instance, they make nice regenerative detectors for folks who want tube-regen smoothness at transistor voltages. And they'd make nice multistage QRP transmitters for folks who want to experience the ins and outs of playing with things like peakable output matching, neutralization, grid-leak bias and screen-grid power control without having to build high-voltage power supplies necessary for reasonable operation with "normal" tubes. (Hint, though: Try running one of those "Command" surplus receivers at 28 V on its heaters *and* plate/screen supply. It will work, albeit with less output and smaller dynamic range.) A dual triode would let you play with a cross-neutralized push-pull amplifier -- textbook-perfect neutralization achievable in this configuration as opposed to single-ended circuits, which are a compromise.

Regards/WJ1Z

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

418. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 15:58:04 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug18.155804.21260@ke4zv.uucp>
Source record: 119735
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24t1tj$ck6@zikzak.apana.org.au> petert@zikzak.apana.org.au (Peter T.) writes:
>>mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>>: I'm getting ready to do some free-lance designing, and would like to start
>>: a discussion...
>>:
>>: What kind of kits would you like to see...?
>>:
>>: What kinds of construction projects would you like to see...?
>
>How about readouts for car management systems, so that the
>average person knows what is happening to his/her car.
>Or is that a proprietry no no?

Oh, this is a good one, commercial units go for over $1,000, but
they're really simple devices, a single chip micro and a bit of
glue. Maybe a bit more than $40, but definitely a project needing
to be done.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

419. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 16:05:37 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug18.160537.21381@ke4zv.uucp>
Source record: 119736
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24s7as$6gm@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>
>Those Low-voltage tubes were called Nuvistors. I still have 2-3 from
>my early TV repair days.

No, Nuvistors (TM RCA) were small, like an overgrown TO-5, metal triodes used as "low noise" amplifiers in several systems, including the RCA New Vista TV set. The Ampex VR2000 quadraplex videotape machine used them as head preamps, and early RCA color studio cameras used them as preamps as well. I still have a box of them around, we retired our last quad machine a year and a half ago (sniff). They were normally operated at 75 to 200 volts on the plate. In the RCA cameras and the Ampex tape machine, they were run at 150 volts.

I built a 432 MHz preamp with one when they first came out. It wasn't quite as good as the cavity preamp using the WE416B, but was a lot cheaper.

Gary

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

420. My List of Mail Order Electronics Companies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 16:25:15 UTC
From: jfw@ksr.com
Message-ID: <30876@ksr.com>
Source record: 119734
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.info

[$Revision: 2.14 $; last updated August 18, 1993]

Here is my list of companies which will sell electronic components in small quantities. Most of these places I have bought from, a couple I haven't. Being a ham radio operator, I am most interested in RF components, and in particular, air variable capacitors, which tend to be scarce (and tend to be used or surplus even if I've otherwise labelled the seller as "NEW"). I apologize in advance for disparaging remarks about what happens when parts suppliers start selling computers, but anyone who has watched Jameco over the years will know just what I mean (though their latest catalog hints at possibly returning to selling parts).

Categories are:
NEW COMPONENTS Distributors and sellers of new components, or "new and some used" in a couple of cases.
SURPLUS ELECTRONICS Usually overstocks, occasionally used equipment. Ideal for stocking the junkbox, usually have dependable stock lines of resistors, capacitors, and some semiconductors, but won't have those LCD modules forever... An invaluable resource, don't shy away from them.
SPECIALTY COMPONENTS In particular, crystals and toroidal cores.
KITS Ham radio kits, random electronic kits, whatever they have.
LITTLE GUYS Separated out because of some twisted sentimentality, I suppose. Intended to honor one or two ham spare-bedroom operations. Note that sending $1 along with catalog requests is a big help for these folks.
PUBLICATIONS Two publications which are essentially all want-ads, plus the address for SAMS PHOTOFACTS because everyone always asks about it on sci.electronics.

Note on shipping costs: I don't always update these frequently enough, and they're generally for continental US unless otherwise mentioned.

NEW COMPONENTS:

Ocean State Electronics
P.O. Box 1458
Westerly RI 02891
+1-800-866-6626 (orders)
+1-401-596-3080
+1-401-596-3590 (FAX)
Minimum $5, S&H $4, free catalog. Wide array of RF parts, especially air variables and B&W coils.

Radiokit (store is located at:)
P.O.Box 973 169 Jeremy Hill Rd.
Pelham NH 03076 Pelham NH 03076
+1-603-635-2235
+1-603-635-2943 (FAX)
No minimum ($3 service charge if under $20), many kits, lots of J. W. Miller chokes & coils, B&W coils, RF switches, Millen variable capacitors, lots of parts in general. Send $1 for the catalog (but note that they are STILL (12-May-93) out of catalogs and it will probably be months before the next one is ready).

Circuit Specialists Inc
P. O. Box 3047
Scottsdale AZ 85271-3047
+1-800-528-1417
No minimum with check or money order, $15 otherwise. $3 S&H.
New electronics, good RF assortment, increasing infestation of computers.

Mouser Electronics Mouser Electronics Mouser Electronics
11433 Woodside Ave. 2401 Highway 287 North 12 Emery Ave.
Santee CA 92071 Mansfield TX 76063 Randolf NJ 07869
Mouser Electronics
370 Tomkins Court
Gilroy CA 95020
Catalog Subscriptions: (800) 992-9943 (Continental US only)
Sales & Service: (800) 34-MOUSER (800-346-6873) (US, Puerto R., Canada)
Very complete catalog of brand-new components (though no air variables). Usually quick service, $20 "minimum" ($5 charge under $20). When ordering, you may want to be sure to ask about availability and shipping locations; they have several warehouses, and frequently orders will get sent from several warehouses (which drives up the shipping costs). Export orders have a $100 minimum, except for Canada and Mexico.

Digi-Key
701 Brooks Ave. South
P.O.Box 677
Thief River Falls, MN 56701-0677
+1-800-DIGI-KEY (334-4539)
+1-218-681-3380 (FAX)
No minimum, $5 handling under $25, free and very complete catalog, very nice indeed. Prices aren't always the best, but rarely excessive. Weak on RF specialty parts (though they now have the ever-popular NE602N), but they do have blue LEDs.

Active Electronics
11 Cummings Park 237 Hymus Blvd
Woburn MA 01801 Pointe Claire, Quebec, H9R 5C7
+1-800-677-8899 (Main number for US and Canada)
+1-514-630-7410 (International)
+1-514-697-8112 (FAX)
$25 minimum, $5 S&H UPS, catalog has a "$10 Suggested retail price" but they sent mine for free. They have 8 stores in the US (Santa Clara CA; Chicago IL;

Baltimore MD; Woburn MA; Detroit MI; Mt. Laurel NJ; Long Island NY; Seattle WA) and 10 stores in Canada (Quebec City; Montreal (2); Ottawa; Mississuaga; Winnipeg; Calgary; Toronto; Edmonton; Vancouver BC). Each store has its own 800 number and FAX number, call the main number(s). International orders are to be mailed to the Canadian address, but they want payment in US funds! Lots of stuff, oriented more toward supplying last-minute requirements of companies than hobbyists, but perfectly happy to take your money in small doses (stores have no minimum order). The $25 minimum for certain items is no longer explicit, but they note that some items will "ship in factory minimum package quantities", which might be worse.

Maplin Electronics Ltd.,
P.O. Box 3,
Rayleigh,
Essex,
SS6 8LR
U.K.
Phone numbers: your international code +44 702 554161 for sales
+44 702 553935 Fax
+44 702 556001 Tech enquiries(2-4pmGMT)
"Over here [in the United Kingdom] the main hobbyist electronics supplier is Maplin Electronics who stock a wide variety of equipment. They have a catalogue which can be shipped for 10.65 pounds sterling by air or 5.50 pounds sterling by surface mail. They accept Mastercard, American Express and International Reply Coupons. They have at least one type of air-filled variable capacitor!" (Thanks to Kev White at Cambridge University).

Newark Electronics
Send catalog requests to:
Newark Electronics
ATTENTION CATALOG DEPARTMENT
4801 N. Ravenswood Ave.
Chicago IL 60640-4496
+1-312-784-5100
They don't have a single mail address or phone; instead, one is supposed to call the closest of three pages worth of branch offices. I don't feel like typing in the entire list (it's copyrighted, anyway :-), so send email for your "local" distributor, or call their administrative offices at the number above. They have a $25 minimum order; they are a Real Distributor, but accept small orders (over the minimum, of course). Their catalog currently 1248 pages; they are very complete (except, of course, for my favorite scarce item, the air-variable capacitor). Note that the catalog prices tend not to match reality all that often, so order by phone rather than by mail; prices tend to be higher than other places, but they have a lot of things that are hard to find from other outlets. Also note that they have six Canadian offices, and one UK office, and will take international orders at 500 N. Pulaski St., Chicago IL 60624-1019, +1-312-784-5100 (FAX +1-312-638-7652, TLX 6718690 NEWARK U).

Arrow Electronics, Inc. Catalog requests to:
Catalog Division Catalog Division

1860 Smithtown Ave. 25 Hub Drive
Ronkonkoma NY 11779 Melville NY 11747-9828
+1-800-93-ARROW
Minimum $25; they no longer have a catalog. They are a Real Distributor, but also didn't mind my placing a personal order (a couple of years ago).

MCM Electronics
650 Congress Park Drive
Centerville OH 45459-4072
+1-800-543-4330
+1-800-824-TECH (product questions)
+1-513-434-6959 (FAX)
Minimum $20 ($25 for charge cards, and they don't take personal checks), handling $1.95 + shipping. Oriented toward repair technicians, really heavy on VCR parts and somewhat overpriced doodads, lots of useful stuff not easily found elsewhere.

Fordham Radio Supply
260 Motor Parkway
Hauppauge NY 11788-5134
+1-800-695-4848
Tools for technicians. One or two items are not outrageously overpriced.

Jameco
1355 Shoreway Road
Belmost CA 94002
+1-800-831-4242
+1-800-237-6948 (FAX)
+1-415-592-8097
$30 minimum order (was $50), >$5 shipping & handling. Their most recent catalog may have reversed a long trend of abandoning parts in favor of PC compatibles, or it may not; one can always hope.

JDR Microdevices
2233 Branham Lane
San Jose CA 95124
Orders: +1-800-538-5000
Cust. Service: +1-800-538-5001
No minimum, $5+ shipping. Mostly computers now, but they haven't yet decided to abandon components; indeed, they recently dropped their minimum order requirement entirely.

Johnson Shop Products
P.O.Box 160113
Cupertino CA 95016
+1-408-257-8614
+1-408-253-6288 (FAX)
Catalog $1. No minimum. Shipping charge is based on UPS; very small orders that can be sensibly shipped in a first-class letter, include money for first-class postage. New and some used electronic parts.

DC Electronics
P. O. Box 3203
Scottsdale AZ 85271-3203
+1-800-423-0070 (orders)
+1-602-945-7736 (stock/price checks)
+1-602-994-1707 (FAX)
$15 minimum charge order, no minimum for checks, $3 min. shipping&handling.
Wide array of ICs, good assortment of electronic components.

EasyTech Inc *** out of business? ***
2917 Bayview Drive
Fremont CA 94538-9932
11 May 93: "EasyTech no longer has an 800 number, and has dropped several lines. The last time I called them (2 months ago), I got the impression they were slowly going down the tubes..." - dts@banyan.com "Both of their 800 number and the customer services numbers are disconnected, and no new numbers are given." - lau@gandalf.rutgers.edu

International Components Corporation
1803 NW Lincoln Way
Toledo OR 97391-1014
+1-800-325-0101 (US & Canada)
+1-503-336-4400 (FAX)
Cabinets&Enclosures; Capacitors; Diodes; ICs; Potentiometers; Resistors; Sockets; Transistors; Books. No minimum order, $2 handling under $25.

Kelvin Electronics
7 Fairchild Ave.
Plainview NY 11803
+1-800-645-9212
+1-516-349-7620
+1-516-349-7830 (FAX)
Minimum order $20; S&H 5% of order ($5 minimum, extra for large stuff, overnight, export (like to Hawaii :-), and etchant; based on UPS charges). Lots of electronic parts & tools, some robotics supplies, model rockets.

H & R Company (Herbach and Rademan)
18 Canal Street, P.O.Box 122
Bristol PA 19007-0122
+1-800-848-8001 (Orders)
+1-215-788-5583
+1-215-788-9577 (FAX)
Minimum order $25 ($5 processing charge under $25), shipping $4.75 under $30; Most items are new overstocks, much regularly stocked stuff as well. Tools, electrical supplies, motors, mechanical components, robotic components.

SURPLUS ELECTRONICS:

All Electronics Corp.
P. O. Box 567
Van Nuys CA 91408-0567
+1-800-826-5432
+1-818-904-0524

+1-828-781-2653 (FAX)
$10 minimum, $4.00 S&H. New and surplus electronics.

Alltronics
2300 Zanker Road
San Jose CA 95131
+1-408-943-9773
+1-408-943-9776 FAX
Surplus electronics. $12 minimum, shipping per UPS.

American Science and Surplus (formerly JerryCo)
P.O. Box 48838
Niles IL 60714-0838 ### New address.
+1-708-475-8440
+1-708-864-1589 FAX
Surplus. *The* surplus place. Lots and lots of surplus. WWII gun cameras, velcro, laser disk chassis, 6 volt VW wipers motors, LEDs, rubber brains, you name it, they've had it. Catalogs are a really good time.
$12.50 minimum order (which includes the $4 shipping charge).

BCD Electro
P. O. Box 450207
Garland TX 75045-0207
+1-214-343-1770
$1 for 1-year subscription to catalogs, no minimum, $0.95 for under $30, $2.90 shipping (extra for Alaska & Hawaii). Surplus electronics, pretty random looking assortment.

Fair Radio Sales
P. O. Box 1105
1016 E Eureka St.
Lima OH 45802
+1-419-227-6573
Surplus electronics. Heavy on parts for old Collins gear.

Hosfelt Electronics
2700 Sunset Blvd.
Steubenville OH 43952
+1-800-524-6464
+1-614-264-5414 (FAX)
No minimum, $3.75 S&H. Surplus electronics.

HSC Electronic Supply (Halted Specialties Co.)
3500 Ryder Street
Santa Clara, CA 95051
+1-800-4-HALTED Orders only
+1-408-732-1573 inside California and outside US
Surplus (new) electronics; new and used test equipment. Minimum order $10 ($2 handling charge under $20), plus UPS shipping cost. Has three stores, of which 3500 Ryder Street is one.

Marlin P. Jones & Assoc.
P.O. Box 12685
Lake Park FL 33403-0685
+1-407-848-8236
+1-407-844-8764 (FAX)
No minimum ($1 fee for under $10), shipping per UPS. Surplus electronics.

R&D Electronics
1224 Prospect Ave.
Cleveland OH 44115
orders: +1-800-642-1123 (tues - fri 9am-4pm sat. 9am-3pm EST)
info: +1-216-621-1121
fax: +1-216-621-8628
$10 minimum. Surplus electronics.
"Also known to stock many components, but this is not discussed in the catalog. Local store, a cleveland institution, is called Electronic Surplus, Inc., and has been there since '48. Third generation now runs it." -- wb8foz

Surplus Sales of Nebraska
1502 Jones Street
Omaha, Nebraska 68102
+1-402-346-4750
+1-402-346-2939 (FAX)
New and surplus radio electronics. Wide selection: air variables.
Catalog $3 (free with order, refundable with $25 catalog purchase).

Tucker Surplus Store
1717 Reserve St.
Garland TX 75042
+1-800-527-4642 extension 135
Surplus electronic gear; oscilloscopes and signal generators from the days when dinosaurs with vacuum tubes roamed the earth (some solid state gear, but all well used). Prices seem relatively high, and you'll be shocked to learn how much it costs to ship a 75 pound oscilloscope by motor freight...
[Steve Brown, N8HFI:
In defense of Tucker, the have a broad selection, repair facilities, and they certify the used equipment to meet the original specification and warranty it for 90 days. Not every source does this:]

Davilyn Corp.
13406 Saticoy St.
North Hollywood, CA 91605-3475
+1-800-235-6222 (Ex. CA)
+1-818-787-3334 (CA)
+1-818-787-4732 (FAX)
Surplus electronic gear.
[has much better prices [than Tucker], but sells used equipment as-is. -N8HFI]

SPECIALTY COMPONENTS:

JAN Crystals
2341 Crystal Drive
P.O. Box 06017

Fort Myers FL 33906-6017
+1-800-JAN-XTAL (Monday through Thursday)
+1-813-936-3750 (FAX)
+1-813-936-2397 (plant)
They make crystals. Minimum order is $10, which might be one crystal, or might be two.

Crystek Corporation
2351/2371 Crystal Drive
P.O. Box 06135
Fort Myers FL 33906-6135
+1-800-237-3061 (M-F) (US and Canada but not Alaska and Hawaii)
+1-813-936-2109
+1-813-939-4226 (FAX)
They make crystals too. They were the cheapest last time I ordered, but I don't have an up-to-date price list. It took about 4 weeks, and they had said it would take 6.

ICM (International Crystal Manufacturing Co., Inc.)
701 W. Sheridan
PO Box 26330
Oklahoma City OK 73126-0330
+1-800-426-9825
More crystals. They were more expensive, but they have lots of pre-made crystals for various rigs, so they would probably be faster.

Amidon Associates
2216 East Gladwick Street
Dominiguez Hills, CA 90220
+1-213-763-5770
+1-213-763-2250 (FAX)
Toroid cores and related things. Very fast service. Now takes MC/Visa and phone orders.

Palomar Engineers
Box 455
Escondido CA 92033
+1-619-747-3343
Toroid cores and shielding beads.

K2AW's Silicon Alley
175 Friends Lane
Westbury NY 11590
+1-516-334-7024
Free catalog, $10 minimum order. Semiconductors, in particular high-voltage diodes.

Small Parts, Inc. [New address and phone, 23 Dec 91]
13980 NW 58th Court
P.O. Box 4650
Miami Lakes, FL 33014-0650
+1-305-557-8222 Order department

+1-305-557-7955 Customer Service (ask for Mirta)
+1-305-558-1255 Catalog (ask for Elizabeth)
+1-305-557-8004 Custom-made Parts (ask for Ziggy)
+1-305-557-8005 Non-standard Sizes
of catalog parts (ask for Eric)
+1-800-423-9009 Toll free FAX line
$12 minimum. Mechanical parts, metal stock, Teflon(R) sheets, tools,
wire-size drill bits (as in #61 size for PC board holes).

KITS:
(The terse "Note:" descriptions are from the ARRL Kit List courteously
supplied by Ed Hare and Mike Gruber at the ARRL.)

624 Kits
171 Springlake Drive
Spartanburg SC 29302
QRP kits (including some designs from W1FB's books) and some parts.

A&A Engineering
2521 W. LaPalma, Unit K
Anaheim CA 92801
+1-714-952-2114
Kits, some components, some books. S&H $4.50, catalog is free with SASE (2 oz
postage).

Antique Electronic Supply
6221 S. Maple Ave.
Tempe, AZ 85283
+1-602-820-5411
Note: Broadcast receiver kits

C.M. Howes Communications
Eydon, Daventry,
Northants NN11 6PT
England
Phone: +44 327 60178
QRP, transmitters, receivers, misc. "The Heathkit of England", though
with assembly manuals not as detailed, also without the intricate mechanicals
of Heathkits.
[Carried by Townsend Electronics (at least) in the US]

Communications Concepts Inc.
508 Millstone Drive
Beaver Creek, OH 45434
+1-513-426-8600
+1-513-429-3811 (FAX)
kits for Motorola Applications Notes (amplifiers and the like), small
assortment of components (chip capacitors, transistors). $4 Shipping&Handling.

Down East Microwave
Box 2310, RR#1
Troy, ME 04987

+1-207-948-3741
Note: Microwave preamps

FAR Circuits
18N640 Field Court
Dundee IL 60118
Printed circuit boards for articles in the usual ham magazines. SASE for list. $1.50 shipping and handling per four boards.

Hamtronics, Inc.
65 Moul Road
Hilton, NY 14468-9535
+1-716-392-9430
Note: Amateur, general interest

John Langner WB2OSZ
115 Stedman St.
Chelmsford, MA 01824-1823
+1-508-256 6907
Slow Scan Television for IBM PC.

Lake Electronics
7 Middleton Close
Nuthall
Nottingham NG16 1BX
England
Note: Amateur

Mercury Systems
15 Lakeside Dr.
Marlton, NJ 08053
+1-609-596-3304
Note: the ARRL Kit list didn't say what they carry; I don't (yet) know either.

Penntek Electronics
14 Peace Dr.
Lewistown, PA 17044
+1-717-248-2507
Note: The Neophyte Receiver, QST

Ramsey Electronics
793 Canning Parkway
Victor NY 14564
+1-716-924-4560
Amateur radio and hobby kits. The ham kits are all pretty simple and pretty inexpensive, and you get about what you pay for. Their new VHF transceiver kits (144, 220, 440) look pretty interesting. Many have complained about the quality of their kits, though.

Tejas RF Technology
P.O.Box 720331
Houston TX 77272-0331

+1-713-879-9300
+1-713-879-9494 (FAX)
Tejas Backpacker-II QRP kit and other things.

Townsend Electronics, Inc.
Box 415
133 N. 1st Street
Pierceton IN 46562
+1-800-944-3661 (US only)
+1-219-594-3661
+1-219-594-5580 (FAX)
C. M. Howes Communications kits. Radio mounts. RSGB and ARRL publications.
$1 for catalog. $4 shipping & handling.

{See also RadioKit, Oak Hills Research}

LITTLE GUYS:

Oak Hills Research
20879 Madison St.
Big Rapids, MI 49307
+1-800-842-3748
+1-616-796-0920
+1-616-796-6633 (FAX)
Send $1 for a flyer. Some parts, QST article kits, transceiver kits,
QRP stuff in general (they inherited the stock from Small Parts Center
when they closed).

Dan's Small Parts And Kits (Formerly KA7QJY Components)
1935 S. 3rd W. #1
Missoula MT 59801
+1-406-543-2872
Send a business-size SASE for a current list of parts. RF parts, including
vernier drives and air variables; now also offers kits. $3.75 shipping,
no minimum. Fast service, lots of satisfied customers.

R&R Associates
3106 Glendon Avenue
Los Angeles, CA 90034
+1-213-474-1315 (res)
[Richard Rathburn, KB6NQ] "I mainly sell pc boards from QST, Radio
Electronics, etc., and a few of in-house design. I also sell IC's, etc."
Send a SASE every now and then for his most recent flyer. He also has boards
for some Motorola Application Notes.

MANUALS:
Eico Electronic Instruments Co., Inc.
363 Merrick Rd
Lynbrook NY 11563
Note: No current kits, EICO manuals and schematics only

PUBLICATIONS:

NUTS & VOLTS MAGAZINE
430 Princeland Court
Corona CA 91719-9938
+1-800-783-4624 (subscriptions)
+1-714-371-3052 (subscribe by FAX)
All advertisements magazine (though they've just publishing small projects). Issues are $2.00 (at least, that's the price on the cover), subscriptions are (third class mail, USA:) $17/1 year, $31/2 years, (first class mail USA) $34/1 year, (Canada/Mexico) US$35, (other foreign, air mail) US$70, (other foreign, surface) US$39. A subscription also entitles you to one free classified ad of 40 words.

Ham Trader Yellow Sheets
PO Box 15142
Seattle WA 98115
"SUBSCRIPTIONS: U.S.: 24 Issues(1 yr) $16.50 50 Issues(2 yrs + 2 issues) $32. 75(3 Yrs + 3) $48. CANADA & MEXICO: 24/$20. 50/$39. 75/$58. FOREIGN: $38 a year sent Airmail. Published 2 ISSUES A MONTH sent 1st Class Mail... NO LONG WAIT FOR AD CIRCULATE! NOTE: A $4/4 issue MINI-SUBSCRIPTION may be ordered by potential subscribers, or WITH AN AD to qualify for the Special Subscriber Ad Rates given below:" Non-subscriber ads $1/{word,number,group} per insertion; subscribers: businesses or other for-profit sales $0.75 per word; ads involving items solely from or for your own use $0.35 a word; hamfest ads $0.35. Ads and ads with subscriptions should be sent to POB 10253 Sarasota FL 34278 during the winter; spring through fall they go to POBox 2057, Glen Ellyn IL 60138.

Howard W. Sams & Company
P.O. Box 7092
Indianapolis, IN 26207-7092
+1-800-428-SAMS
Publishers of SAMS PHOTOFACTS and many other electronics books. There is an Annual Index of SAMS PHOTOFACTS whose cost I have forgotten. In-print Photofacts run between $14.95 to $39.95 (for computer Photofacts); they will photocopy out-of-print Photofacts for $11.95 + $2.50S&H for one page, plus $.55 per page thereafter.

RF Design Magazine
P O Box 1077
Skokie IL 60076-9931
+1-312-762-2193
A magazine for professional RF designers. Subscriptions are $38 per year in the US, $48 in Mexico and Canada, $51 elsewhere, unless you appear to be a "qualified subscriber" (i.e. are in serious danger of convincing your company to buy a $12,000 spectum analyzer based on an ad) in which case it's free. Heavy on theory, and even the advertisement articles are educational.

Electronics Now (formerly Radio Electronics)
Subscription Service
P.O. Box 51866
Boulder CO 80321-1866
+1-800-999-7139

A magazine for thumb-fingered electronics hobbyists. Subscription rate on the bingo card in the November issue (the latest I was able to dig up) was $19.97 per year.

Popular Electronics
Subscription Department
P.O.Box 338
Mt. Morris, IL 61054-9935
+1-800-827-0383
Like Electronics Now. $18.95 according to the latest bingo card I see.

The Computer Applications Journal (Circuit Cellar INK)
P. O. Box 3050
Southeastern, PA 19398-9932
+1-203-872-2204 (FAX)
This magazine is what Steve Ciarcia wanted BYTE to be when it grew up. It focuses on microcontroller applications and other digital projects.
$21.95 per year (12 issues, now) (Canada, Mexico: add $10 surface mail, $20 air mail; other countries: add $28.)

NOTES:

This file, and many others, are available for anonymous ftp from ftp.cs.buffalo.edu. It is also available from another anonymous ftp site, toxicwaste.mit.edu:/pub/archive/sci.electronics/Mail_Order_Companies. (Contact warlord@athena.mit.edu to offer things to the latter)

CHANGES FOR $Revision: 2.14 $

Add some FAX numbers, use +1-xxx-xxx-xxxx style phone numbers.
New address & phone for Communications Concepts.
Add Tejas RF Technologies.

421. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 17:03:01 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24tnc5$qbc@hobbes.cc.uga.edu>
Source record: 119733
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24t1tj$ck6@zikzak.apana.org.au> petert@zikzak.apana.org.au (Peter T.) writes:
>>mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>>:
>>: What kind of kits would you like to see...?
>>: What kinds of construction projects would you like to see...?
>
>How about readouts for car management systems, so that the
>average person knows what is happening to his/her car.
>Or is that a proprietry no no?

Great idea, but I don't have the information necessary to tackle it;
I hope someone does. I can't see how the car mfr. could stop you from
reading the data in your car (although they could withhold some
information about how to do so).

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

422. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 17:04:40 UTC
From: laird@stable.ecn.purdue.edu
Message-ID: <laird.745693480@stable.ecn.purdue.edu>
Source record: 119737
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I would love to see (and I've offered to pay for) kits for dimming lights. This seems like such a basic request, and it's one that I've seen several times.

At the simple end, this should be a tiny module that accepts AC and an n-bit digital word, and has AC out (to a light). At the complex end, it would use addressable serial communications (using that Motorola device - I can look it up later.), and perhaps be able to return some status (like "Bulb Good").

My current application for such a device is for home lighting control. If I could just mount these modules at each light, and connect them to the central computer, I'd be all set.

BTW, if anyone wants to design and make these for me, I'll gladly pay. I'm thinking of something in the range of $10-$30 each for about 30 modules with addressable serial interfaces (RS-485?), and Good dimming qualities. (Then you could sell your story and schematics to Circuit Cellar Ink. and make a bunch more money!)

--kyler

423. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 18:40:27 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <24tt2rINNj6i@rave.larc.nasa.gov>
Source record: 119744
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Aug18.125445.14562@ncsu.edu> npstewar@eos.ncsu.edu (NATHAN PHILLIP STEWART) writes:
>
>The vfd bricks sounds good, but to do a small amplifier, it sounds like
>maybe using three. You could use one for each half of a 12AU7 maybe and
>get 3-5 watts in a push pull arrangement. You'd still need a custom
>transformer though, unless someone else has a neat little trick. Given
>the size, you could afford the space of three. How much do these things
>cost, and where can you find them?

Yes, you won't get a lot of power out of them. They turn up all the time at hamfests, and you can gut them out of fluorescent displays, which also turn up frequently. If you want to buy them new, Endicott Research in Endicott, NY makes a wide variety of them, but you're going to pay $30 or so for the 15 mA version. They also have a 45 mA version. I have seen foreign made 100 mA units around out of salvaged gear, but wouldn't have a clue where to get them new.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

424. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 18:42:10 UTC
From: jonin@netcom.com
Message-ID: <joninCByxAB.2zq@netcom.com>
Source record: 119739
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Michael Covington (mcovingt@aisun3.ai.uga.edu) blurted:
: I'm getting ready to do some free-lance designing, and would like to start
: a discussion...

: What kind of kits would you like to see offered by companies like Ramsey
: and others in the under-$40-per-kit class?

Well - Personally I would like to see a digital voice recorder and
playback. :) would be expecially nice if the voice could be stored
on eeprom so I could power off the circuit and still play back the
sample at a later time. :)
--
Evil Geniuses /\ ___ ___ o ___ o @netcom.com 37.16N 121.58W 200ft.
For A \ oo / / // _ \ / / \ /\ / / \ __o --- Squidly Diddly Says ---
Better \--/__/ // |/ // / // // / /(oO) A Penny Saved is Rediculous
Tommorow\/___/ ___/ \/ / \/ \/ / /||\

425. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 18:54:06 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24ttse$sa4@hobbes.cc.uga.edu>
Source record: 119738
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Aug18.155804.21260@ke4zv.uucp> gary@ke4zv.UUCP (Gary Coffman) writes:
>In article <24t1tj$ck6@zikzak.apana.org.au> petert@zikzak.apana.org.au (Peter T.) writes:
>>
>>How about readouts for car management systems, so that the
>>average person knows what is happening to his/her car.
>>Or is that a proprietry no no?
>
>Oh, this is a good one, commercial units go for over $1,000, but
>they're really simple devices, a single chip micro and a bit of
>glue. Maybe a bit more than $40, but definitely a project needing
>to be done.

Yes; the right way to do it would probably be as a very simple hardware
interface to your laptop computer, together with software.
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

426. PLL questions..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 19:19:13 UTC
From: andyw@aspen32.cray.com
Message-ID: <1993Aug18.141913.2697@hemlock.cray.com>
Source record: 119741

I wish I'd paid more attention when I was in college, but
I didn't, so here I am asking dumb questions..

I'm looking at using the Motorola MC13176D as a local
oscillator in a UHF receiver. In the data sheet, it
suggests a wide loop bandwidth in this application, in
order to reduce noise on the output. How wide is wide ?
The phase comparator in the 13176 has an output impedance
of around 73KOhm, the CCO has an input impedance of 500 Ohm.
If I opt to just use an RC low-pass filter, it's hard
to get one with a Fc around 100KHz with such a high
input impedance - should I use a buffer to present
a lower impedance to the filter ?

I'm also interested in using the same component as
a TX exciter, and then I need a narrow loop bandwidth,
if I'm going to directly modulate the CCO, how narrow
is narrow ?

If anyone has a "PLL in 3 paragraphs" document lying
around, I'm sure I'm not the only person who would
benefit from a clarification of natural frequency, loop
gain, damping factor, and loop bandwidth.

--
andyw. N0REN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

427. Re: DSP receiver (was: Single frequency receiver)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 19:20:30 UTC
From: alanb@sr.hp.com
Message-ID: <CByz27.BE6@srgenprp.sr.hp.com>
Source record: 119740

Jon Bloom, KE3Z (jbloom@arrl.org) wrote:
: In rec.radio.amateur.homebrew, alanb@sr.hp.com (Alan Bloom) writes:
: >Zack Lau (zlau@arrl.org) wrote:
: >
: >: It might be interesting to do a DSP receiver with a TRF front end
: >: when the technology gets cheap enough for your budget. ...
: >
: >There are two main challenges with the idea. One is dynamic range. ...

: Exactly. And in order to achieve the theoretical dynamic range of
: any A/D, the analog circuitry "up front" in the A/D must exhibit
: dynamic range sufficient to the task. ...

: >The other problem is sample rate. ...
: >Even if you undersample, the sample-and-hold circuit must be specified
: >at the RF/IF frequency, not at the sample rate. With a superhet, you
: >can use a fairly low last IF frequency, greatly easing the S/H specs.
: >A 60+ MHz S/H with 16-bit accuracy is not a low-cost off-the-shelf item!

: You bet. And the more bits you use, the more stringent the
: requirements on the S/H. ...

: By the way, this stuff isn't just theory. Sampling at IF is what W-J's
: DSP-based receiver does. ...

: For the time being, at least, down conversion to a low IF is still the
: best approach for a DSP-based ham receiver. ...

I was just about to throw away my copy of RF Design Magazine's
"1993/1994 Directory" (since it is mostly just a catalog of ads) when I
noticed a real article buried in the center of the book:

"A DSP-Based Approach to HF Receiver Design..." by R.M. Lober

The article describes Watkins-Johnson's DSP-based HF receiver along with
a very readable quick description of analog receiver basics and how to
apply DSP technology to same. The author addresses the subject of this
string directly:

"At first glance, it appears that a true digital receiver is
formed by direct application of the amplified HF (i.e. 2 to 30 MHz)
frequency range to a high speed A/D converter. However state-of-
the-art A/D converters operating at greater than 100 MHz (i.e. the
required minimum sampling rate if the anti-aliasing filter is to
be of practical design) have a limited dynamic range due to the
number of available bits. This is currently 10 bits, which results
in 60 dB of dynamic range -- much too low for the HF spectrum...

Therefore the design of a digital receiver usually involves
frequency conversion to near baseband by using an analog
superheterodyne front end.

Since all active devices are somewhat non-linear in practice, and
an A/D converter is made up of active analog components,
intermodulation distortion becomes important, not only in all
receiver circuitry before the A/D converter, but within the A/D
converter itself. ...

The author must be on the right track, since he confirms what we said :=)

AL N1AL

428. Kits list - CTCSS feedback

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-18 21:47:58 UTC
From: arnim@actrix.gen.nz
Message-ID: <1993Aug18.214758.19377@actrix.gen.nz>
Source record: 119742

For some input on the CTCSS stuff, there are at least two methods being used that I know of...

Firstly, an NZ manufacturer of mobile radios, Tait Radio in Christchurch, does the CTCSS in firmware, in, I believe, a 6805 flavour uC.

Secondly, there is a specialist comms IC manufacturer in the UK that makes, among other things, CTCSS encoders and decoders. The dual function device is called the FX365. I cannot vouch for it personally, but if you want more details, CML can be faxed at (+44)-376-518247, the address is 1 Wheaton Road, Essex CM8 3TD. Btw, CML = Consumer Microcircuits Ltd.

Another btw - CTCSS = Continuous Tone Call Signalling System, or something very similar, which is using tones below 300 Hz for control signalling, for example, in trunked radio applications.

For what it's worth...

Arnim arnim@actrix.gen.nz

429. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 02:41:45 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <24up99$6ph@hobbes.cc.uga.edu>
Source record: 119746
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24thak$iod@ucunix.san.uc.edu> morris@ucunix.san.uc.edu (Ted Morris) writes:
>Contrariwise, let me build on the discussion and ask about projects
>using those Compactron tubes I've pulled out of all those old TV sets I
>cannibalized when filling my junkbox...I've heard of a few articles in
>the ham magazines which made use of them, and have a couple of old
>photocopies running around, but I'd like to see/hear of some more.
>Would there be too much inter-section interference/intermodulation to
>be able to make a small-tube-count superhet rcvr and/or xmtr out of
>these?

No; inter-section interference is practically nil. Plates make good
shields.

The thing to do is look in a tube directory and find the characteristics
of each section, then see which discrete tubes each of them resembles.
Then adapt circuits for that tube. For example, if you find a triode
section that is like a 6C4, you can use 6C4 circuits with it.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

430. Re: Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 08:05:34 UTC
From: schro@natter.sni.de
Message-ID: <schro.745747534@natter>
Source record: 119633

mtracy@arrl.org (Michael Tracy) writes:

>The ARRL Field Services BBS has a shareware program called HAMCOM21.ZIP
>that serves as a terminal program for use with a very simple circuit.
>The diagram of this circuit is contained in the program's online help.
>The FSD BBS can be reached at: (203) 666-0578. The terminal settings are
>the standard 8 bits, No parity, 1 stop bit (8N1) with baud rates up to 9600.

Please note that HAMCOM22.ZIP is now available by ftp from
WSMR-SIMTEL20.Army.Mil, OAK.Oakland.Edu, wuarchive.wustl.edu and other
simtel mirror sites.

73 es 55 de Django
DL5YEC
(HamComm expert:-)

431. Dallas DS2404 Programming Problem

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 08:27:54 UTC
From: antsu@castor.utu.fi
Message-ID: <ANTSU.93Aug19102754@castor.utu.fi>
Source record: 119747

Hi!

I am having bit error problems (?) with DS2404 RTC and HC11 CPU. My software
should use the timing values for the chip. Has anyone out there ever used
this chip in 3-wire interface ?

Any code/schema would be appreciated!!

Best 73 Antti-Pekka OH1YF
--
****
* Mail: Antti-Pekka Virtanen E-Mail: antsu@utu.fi *
* Arholankuja 3 as 21 antsu@mea.utu.fi *
* SF-21100 Naantali antsu@nic.funet.fi *
* Finland antsu@sandra.pp.fi *
****

432. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 09:23:48 UTC
From: vbreault@rinhp750.gmr.com
Message-ID: <VBREAULT.93Aug19092348@rinhp750.gmr.com>
Source record: 119749
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24thak$iod@ucunix.san.uc.edu> morris@ucunix.san.uc.edu (Ted Morris) writes:

Contrariwise, let me build on the discussion and ask about projects
using those Compactron tubes I've pulled out of all those old TV sets I
cannibalized when filling my junkbox...I've heard of a few articles in
the ham magazines which made use of them, and have a couple of old
photocopies running around, but I'd like to see/hear of some more.
Would there be too much inter-section interference/intermodulation to
be able to make a small-tube-count superhet rcvr and/or xmtr out of
these?

Back in 1965 (+/- 1) I built a low power FM transmitter (~90mHz) using
a compactron. I think the design came from _Electronics Illustrated_.
It was a fun project and the transmitter worked fairly well. I was able
to load up a stack of records on the family HI-FI and listen to them
on a portable radio anywhere in or around our home.

--
Val Breault - N8OEF - vbreault@gmr.com \ /|
Instrumentation dept GM NAO R&D Center \ / |
My opinions are not necessarily those of \ /__|
GMR nor of the General Motors Corporation \/ |___

433. <None>

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 09:33:34 UTC
From: jeh@cmkrnl.com
Message-ID: <1993Aug19.023334.2538@cmkrnl.com>
Source record: 119748
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24r87r$462@hobbes.cc.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
> Here's a challenge.
>
> One particular byway of electronic history that intrigues me is
> low-voltage vacuum tubes -- that is, tubes that operate off a single
> 12-volt supply. They were introduced (for car radios) around 1958 and
> became obsolete around 1960 when good RF transistors became affordable.
> So they're an almost-forgotten chapter of history.
>
> My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
> available from Antique Electronic Supply, Tempe, Arizona, and at
> hamfests. The 12U7 (not 12AU7) dual triode is one of the most useful;
> they also had a pentagrid converter and a few other things.
> In a pinch, a 12AT7 will substitute for a 12U7 and work OK in
> some low-voltage tube circuits.

Yep. Cadillac (and probably other GM divisions) used these in their car radios for a while. They couldn't put out any power, so a single power transistor was used for the audio output stage, but the rest of the set was low-voltage tubes, and no vibrator.

Popular Electronics had a couple of "starved circuit" tube projects around '65 or so... an audio oscillator and a low-power audio amp. If I remember right these used regular (not low-plate-voltage) tubes, they just didn't need much plate current.

--- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

434. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 13:15:23 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug19.131523.25029@ke4zv.uucp>
Source record: 119750
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24thak$iod@ucunix.san.uc.edu> morris@ucunix.san.uc.edu (Ted Morris) writes:
>Contrariwise, let me build on the discussion and ask about projects
>using those Compactron tubes I've pulled out of all those old TV sets I
>cannibalized when filling my junkbox...I've heard of a few articles in
>the ham magazines which made use of them, and have a couple of old
>photocopies running around, but I'd like to see/hear of some more.
>Would there be too much inter-section interference/intermodulation to
>be able to make a small-tube-count superhet rcvr and/or xmtr out of
>these?

They work fine. For example, the 6C10 is basically 3 sections of a
12AT7 in one envelope, with 6 volt filaments. They were used in
the B&W 6100 SSB transmitter. I have one, it works fine, and I've
got about a half a dozen spare 6C10s on the shelf for that day
when it doesn't work fine anymore. :-)

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

435. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 13:17:51 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug19.131751.25120@ke4zv.uucp>
Source record: 119751
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24ttse$sa4@hobbes.cc.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>In article <1993Aug18.155804.21260@ke4zv.uucp> gary@ke4zv.UUCP (Gary Coffman) writes:
>>In article <24t1tj$ck6@zikzak.apana.org.au> petert@zikzak.apana.org.au (Peter T.) writes:
>>>
>>>How about readouts for car management systems, so that the
>>>average person knows what is happening to his/her car.
>>>Or is that a proprietry no no?
>>
>>Oh, this is a good one, commercial units go for over $1,000, but
>>they're really simple devices, a single chip micro and a bit of
>>glue. Maybe a bit more than $40, but definitely a project needing
>>to be done.
>
>Yes; the right way to do it would probably be as a very simple hardware
>interface to your laptop computer, together with software.

For those of us amateur mechanics who don't have laptops, or don't want to get them greasy, I'd rather have a small shockproof handheld unit with LCD readout that I can actually use under the hood of a running car.

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

436. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 13:24:49 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <24vuv1INN9jm@rave.larc.nasa.gov>
Source record: 119755
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <24thak$iod@ucunix.san.uc.edu> morris@ucunix.san.uc.edu (Ted Morris) writes:
>Contrariwise, let me build on the discussion and ask about projects
>using those Compactron tubes I've pulled out of all those old TV sets I
>cannibalized when filling my junkbox...I've heard of a few articles in
>the ham magazines which made use of them, and have a couple of old
>photocopies running around, but I'd like to see/hear of some more.
>Would there be too much inter-section interference/intermodulation to
>be able to make a small-tube-count superhet rcvr and/or xmtr out of
>these?

Compactrons are wonderful! I used to love the things, but it's been
a few years since I have seen one.

There was one tube that wasn't a real Compactron, but was made by Mullard
and had the complete TV deflection stuff in one tube... a couple of diodes,
a triode, a pentode, and a power sweep tube. When I was a kid, I used a
pair of them to build an AM transmitter, using the rectified AC line for
B+, a Pierce crystal oscillator, a couple of stages of amplification and
an audio amplifier stage, and then I had the two sweep tubes biased
for linear operation, after the modulated stage. Not very efficient, not
very good audio quality, but it worked and cost me next to nothing. Maybe
ten or twenty watts output or so.

There were a couple other Compactrons that were intended for tuners,
one of which was used by a friend of mine to build a 6M converter that
had amazingly good performance, almost as good as my Nuvistorized one.

Sheesh.. I don't even have any of these things listed in my GE tube handbook.
It's been a long, long time.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

437. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 19:53:15 UTC
From: ajb@iti.org
Message-ID: <ajb.745789995@hela.iti.org>
Source record: 119752
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

How about an assortment of miniture modular components that plug togather and work with minimum fuss. Kind of a tinker toy microprocessor set. It could be based on the I2C bus and the basic stamp micros. You could have very small inexpensive boards that would run a key pad, LCD display, A/D, DIO ect. They could be all strung on the same bus and a complete system could be hidden in the small nooks and cranies of your projects.

ajb

438. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 20:58:46 UTC
From: dnewkirk@arrl.org
Message-ID: <2086@arrl.org>
Source record: 119753
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In rec.radio.amateur.homebrew, morris@ucunix.san.uc.edu (Ted Morris) writes:

[deletions, inc intro on Compactrons]

>Would there be too much inter-section interference/intermodulation to
>be able to make a small-tube-count superhet rcvr and/or xmtr out of
>these?

No.

David Newkirk, Senior Asst Tech Editor | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

439. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 21:45:32 UTC
From: dfeldman@teal.csn.org
Message-ID: <CC10Fw.5C4@csn.org>
Source record: 119754
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <ajb.745789995@hela.iti.org> ajb@iti.org (Al Boehnlein) writes:
>How about an assortment of miniture modular components that plug togather
>and work with minimum fuss. Kind of a tinker toy microprocessor set. It

I built up a small 68HC11 CPU in one of those little aluminum modular boxes.
All interface pins came thru feedthru caps, so in a way I had built a
(somewhat) RFI-reduced CPU chip that could be embedded in the way you mention.

73 Dave WB0GAZ

440. QRP type kits with DDS?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 21:49:22 UTC
From: davidc@lsid.hp.com
Message-ID: <CC10MB.CxC@hpcvsnz.cv.hp.com>
Source record: 119760

Are there any QRP type kits out there that use Direct Digital Synthesis for the VFO? Adding DDS to the C.M. Howes 10 & 15 meter CW/SSB kit would be just what I am after. Has anyone done this? I have read some of the recent articles in 73 magazine that feature DDS projects and am fairly comfortable with the digital end of things (i.e. controlling a DDS with a micro-controller etc.) but am still pretty new to the RF analog part of it. Suggestions anyone?

Dave, KB7QCL

441. Re: <None>

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-19 23:06:36 UTC
From: roth@3d.enet.dec.com
Message-ID: <1993Aug19.224349.3407@peavax.mlo.dec.com>
Source record: 119756
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Aug19.023334.2538@cmkrnl.com>, jeh@cmkrnl.com writes...
>In article <24r87r$462@hobbes.cc.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>> Here's a challenge.

>> One particular byway of electronic history that intrigues me is
>> low-voltage vacuum tubes -- that is, tubes that operate off a single
>> 12-volt supply. They were introduced (for car radios) around 1958 and
>> became obsolete around 1960 when good RF transistors became affordable.
>> So they're an almost-forgotten chapter of history.

>> My challenge: DO SOMETHING INTERESTING WITH THEM. They are still
>> available from Antique Electronic Supply, Tempe, Arizona, and at
>> hamfests...

>Yep. Cadillac (and probably other GM divisions) used these in their car
>radios for a while. They couldn't put out any power, so a single power
>transistor was used for the audio output stage, but the rest of the set was
>low-voltage tubes, and no vibrator.

I had one from a 57 Ford station wagon. It had the single class A
transistor output (transformer coupled) and a low 264 kHz or so IF, so
it was capable of being quite selective.

What I liked were the old radios with "synchronous" vibrators! Now that's
a solution to a problem from the iron age...

Some of those old radios from Cadillacs were amazing wonders, coming in
several parts with mechanical coupling between the head end and the
unit with the tuner. I had some from junkyards that were in at least
3 pieces.

>Popular Electronics had a couple of "starved circuit" tube projects around
>'65 or so... an audio oscillator and a low-power audio amp. If I remember
>right these used regular (not low-plate-voltage) tubes, they just didn't need
>much plate current.

Yes, it's surprising that one can run tubes on such low voltages... and
you can run the heaters on much lower voltages also and the tubes will
still function.

A few of the first things I did with electronics were tube radios
using those tubes that had 1.5 V filaments and that used 90 volt
"B" batteries. (which I think you can still buy?)

Certainly from another era.

- Jim

442. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-20 15:55:30 UTC
From: wtm@uhura.neoucom.edu
Message-ID: <1993Aug20.155530.12008@uhura.neoucom.edu>
Source record: 119757
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

...or how about those flat-pack tubes that were popular in the late 1950s and early 1960s. Somewhre in my basement, I have an old Motorola "portable" radio that is on lowband FM that has about 20 or 30 of those little tubes in it. They aren't much bigger than an NE-2H lamp and have five or so wire leads sticking in a row out of the bottom of the envelope. It's been years, but it seems they had CKxxx designations for part numbers. Plate voltage was around 90 volts or so, give that the unit used a 90 volt B battery. I think the fillment is 1.5 volts.

--
Bill Mayhew NEOUCOM Computer Services Department
Rootstown, OH 44272-9995 USA phone: 216-325-2511
wtm@uhura.neoucom.edu amateur radio 146.58: N8WED

443. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-20 19:59:38 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <253afaINN9md@rave.larc.nasa.gov>
Source record: 119759
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Aug20.155530.12008@uhura.neoucom.edu> wtm@uhura.neoucom.edu (Bill Mayhew) writes:
>...or how about those flat-pack tubes that were popular in the late
>1950s and early 1960s. Somewhre in my basement, I have an old
>Motorola "portable" radio that is on lowband FM that has about 20
>or 30 of those little tubes in it. They aren't much bigger than an
>NE-2H lamp and have five or so wire leads sticking in a row out of
>the bottom of the envelope. It's been years, but it seems they had
>CKxxx designations for part numbers. Plate voltage was around 90
>volts or so, give that the unit used a 90 volt B battery. I think
>the fillment is 1.5 volts.

These are subminis. If anyone has any spare 5899s around, I'd appreciate hearing from them.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

444. Re: Spanner wrench needed for recessed BNC connectors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-20 22:10:13 UTC
From: fred-mckenzie@ksc.nasa.gov
Message-ID: <fred-mckenzie-200893170331@k4dii.ksc.nasa.gov>
Source record: 119758

In article <24g5ak$sak@bronze.lcs.mit.edu>, moisan@bronze.lcs.mit.edu
(David Moisan) wrote:
> I've volunteered (once again) to fix my friend's HT, a Yaesu 727. Like
> most (if not all) HT's, this one has a recessed BNC connector with a
> retaining ring that needs to be unscrewed before I can take the cover off.
> I need a spanner wrench to do this right, and I haven't found one.

Dave-

I would second the suggestion that Edmund Scientific might be a good source
for spanner wrenches.

On the other hand, you may be able to make your own. If you happen to be
near a hardware store, take a look at the tool provided with the service
kits for Delta and Peerless faucets. They have the equivalent of a spanner
wrench combined with an allen wrench at the other end, and it is usually
surplus after the kit has been installed.

Perhaps you could modify one of these tools for a shorter span. Or,
perhaps you will see an easy way to make one, once you've seen them. For
example, an old table fork could have the center tines removed, and the
ends of the two outer tines could be bent at right angles, and filed to fit
the slots in the BNC retainer ring.

Good luck.

73, Fred, K4DII

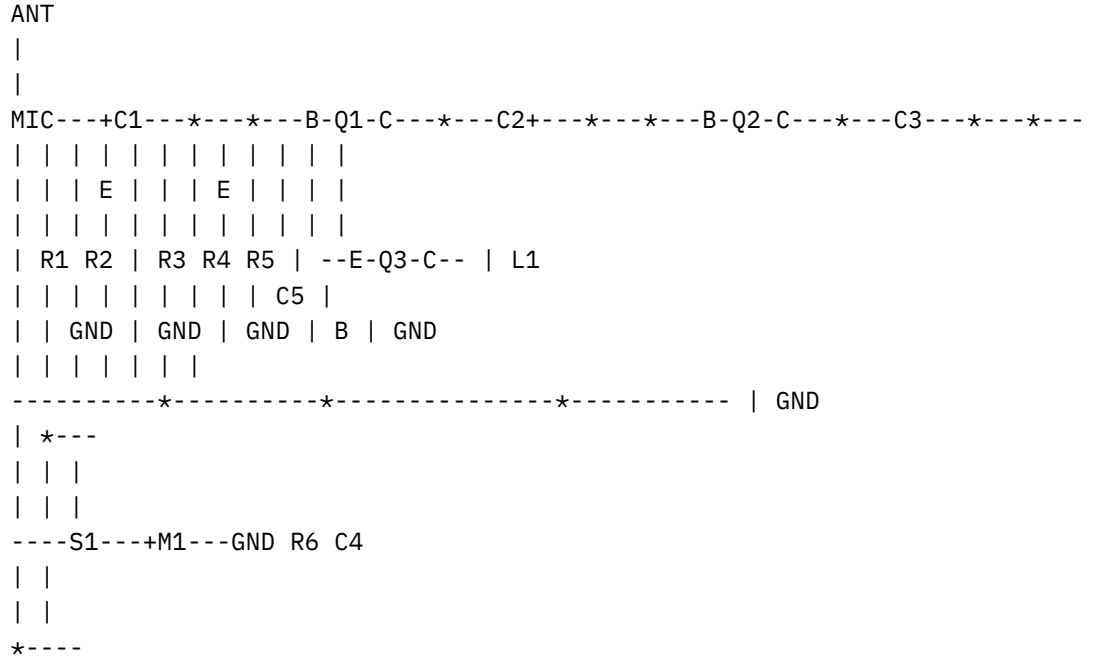
445. Project 4: 160 meter phone xmtr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 00:59:00 UTC
From: jeffrey@Hawaii.Edu
Message-ID: <CC342C.CFr@news.Hawaii.Edu>
Source record: 119761

Gang:
Here's the next project: a 160M phone xmtr; sorry it's AM but these are OLD project books! Just the simplicity of it should make it fun to build and play with. It's VFO tuned by adjusting the slug of L1. In fact you can use this on 75 meters (and there IS some AM activity on 75) just by changing the final L/C network accordingly. Note that as various antennas are tried, the frequency will change markedly, necessitating readjustment of the L1 slug. The microphone should be a low-impedance crystal type.

Parts list

C1, C2 4 uF, 15 VDC electrolytic caps
C3 100 pF
C4 .015 uF
C5 180 pF
L1 Vari-loopstick (WRL 10M162 or equiv.)
M1 9 volt battery
Q1, Q2, Q3 GE-2 transistors
R1 10K resistor
R2 750K
R3, R4 5.1K
R5 200K
R6 75K
S1 SPST switch



|
|
GND

Since the xmit frequency can change as you change antennas, I bet a strong wind blowing against a longwire antenna will cause a little `swing' in frequency...

This circuit was taken from Brown and Kneital's 101 EASY HAM RADIO PROJECTS.

Next up is a one-transistor 15M CW xmtr; stay tuned.

Jeff, NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@hawaii.edu

446. Re: your LISTSERV request "list ham-homebrew n0pgh@n0pgh/ampr/org"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 04:46:46 UTC
From: Listserv@ucsd
Message-ID: <9308210446.AA24422@ucsd.edu>
Source record: 119762

```
Per request by n0lyd@n0lyd.ampr.org
"list ham-homebrew n0pgh@n0pgh/ampr/org"
'ham-homebrew' is not subscribed to any mailing lists.
```

447. Re: your LISTSERV request "list ham-homebrew n0pgh@n0pgh/ampr/org ham-homebrew"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 04:52:25 UTC
From: Listserv@ucsd
Message-ID: <9308210452.AA24571@ucsd.edu>
Source record: 119764

```
Per request by n0lyd@n0lyd.ampr.org
"list ham-homebrew n0pgh@n0pgh/ampr/org ham-homebrew"
'ham-homebrew' is not subscribed to any mailing lists.
```

448. Re: your LISTSERV request "list ham-homebrew n0pgh/ampr/org@n0pgh.ampr.org"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 04:52:28 UTC
From: Listserv@ucsd
Message-ID: <9308210452.AA24581@ucsd.edu>
Source record: 119763

```
Per request by n0lyd@n0lyd.ampr.org
"list ham-homebrew n0pgh/ampr/org@n0pgh.ampr.org"
'ham-homebrew' is not subscribed to any mailing lists.
```

449. Need help with RF modem design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 05:04:42 UTC
From: dq528@cleveland.Freenet.Edu
Message-ID: <254adb$9qd@usenet.INS.CWRU.Edu>
Source record: 119765

I'm working on a data logger/radio telemetry design and struggling with the modem portion of the project. I'll be using an off the shelf UHF or VHF FM tranceiver. The uC is a 68HC11. The amount of data to be transmitted is low so 1200 baud FSK, ala ham TNC-2, modulation seems reasonable. My initial scheme is to use the same demodulation circuit as the TNC-2 clones; an XR2211. Modulation would be done in firmware, then low-pass filtered to generate 1200Hz/2200Hz. Design priorities are: 1) Low parts count, 2) Low power (source is solar panel/lead-acid battery), 3) No (or little) manual calibration (read: no pots), 4) Cost.

Questions to anyone who cares to respond are:

*Does this seem like a reasonable approach? I'm commited to the HC11, but no other parts.

*Is FSK the optimal type of modulation here? Given the capabilities of the HC11 should I look at other modulation approaches which might require less supporting circuitry?

*Am I using the HC11 to full advantage? It will be lightly loaded with data collection tasks. Might the built-in A/D be used for demodulation?

*Would it be overkill to use a switched-capacitor filter IC to low-pass filter the digitally modulated output signal? It seems a simple passive filter would leave too much energy in the harmonics. Suggestions for other filter solutions?

*As I have no requirements for compatibility with other systems, I thought I'd pick and choose pieces of AX.25 for my packet protocol. Features on the prototype will be bare-bones but minimally include: error detection/re-transmission and packet "digipeating". This is the "How would you change AX.25?" question. Forward error correction? HDLC?

*Book suggestions? Magazine article suggestions? Places to look for similar circuits or ("C") source code?

Thanks in advance for any comments,

Bret
--
Bret Berger KB7EGU	dq528@cleveland.freenet.edu
	(216) 467-0965 (216) 467-3580 - FAX
Engineer	6527 Deerfield Drive, Suite 303
StoneFly Technology	Sagamore Hills, OH 44067-3108

450. Re: Need help with RF modem design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 14:44:58 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug21.144458.5530@ke4zv.uucp>
Source record: 119766

In article <254adb$9qd@usenet.INS.CWRU.Edu> dq528@cleveland.Freenet.Edu (Bret Berger) writes:
>
>I'm working on a data logger/radio telemetry design and struggling with
>the modem portion of the project. I'll be using an off the shelf UHF or
>VHF FM tranceiver. The uC is a 68HC11. The amount of data to be
>transmitted is low so 1200 baud FSK, ala ham TNC-2, modulation seems
>reasonable. My initial scheme is to use the same demodulation circuit
>as the TNC-2 clones; an XR2211. Modulation would be done in firmware,
>then low-pass filtered to generate 1200Hz/2200Hz. Design priorities
>are: 1) Low parts count, 2) Low power (source is solar panel/lead-acid
>battery), 3) No (or little) manual calibration (read: no pots), 4) Cost.
>
>Questions to anyone who cares to respond are:
>
> *Does this seem like a reasonable approach? I'm commited to the
>HC11, but no other parts.
>
> *Is FSK the optimal type of modulation here? Given the
>capabilities of the HC11 should I look at other modulation approaches
>which might require less supporting circuitry?
>
> *Am I using the HC11 to full advantage? It will be lightly loaded
>with data collection tasks. Might the built-in A/D be used for
>demodulation?

Well what you're proposing isn't FSK, it's AFSK. You could just square up the audio and use a spare interupt line to *count* cycles with the microprocessor for decoding the two tones. However, you'll likely find it easiest to take the Kantronics Data Radio approach and really use true FSK with a data slicer on the discriminator output. Assuming you maintain a good link budget, this is simple and reliable. The WA4DSY tracking data detector would be a good circuit for receiving FSK from the radio discriminator. This will allow for up to 5 kHz frequency drift in the radios. Modulation would consist of TTL voltages through a resistive divider directly to the varactor modulators of the radios. Now this requires minor radio surgery, but it uses few parts and almost no uP cycles to implement.

> *As I have no requirements for compatibility with other systems, I
>thought I'd pick and choose pieces of AX.25 for my packet protocol.
>Features on the prototype will be bare-bones but minimally include:
>error detection/re-transmission and packet "digipeating". This is the

>"How would you change AX.25?" question. Forward error correction?
>HDLC?

You don't need FEC unless your link budget is really marginal. A
small beam would be cheaper, simpler, and use less power. :-)

You do want to use HDLC and a scrambler, or at least Manchester encoding,
to keep the modulation symetrical. Long periods of mark are not a good
idea for FSK data systems. If you're bound to simplex half duplex, you
can do channel management with simple carrier squelch. You might want
to look at the old Vancouver protocol, it has only 8 bits of address
overhead.

> *Book suggestions? Magazine article suggestions? Places to look
>for similar circuits or ("C") source code?

The KA9Q code has C source to implement AX25, and the ARRL publishes
the AX25 spec.

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

451. Re: Need help with RF modem design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 16:58:31 UTC
From: bart@wb6hqk.uucp
Message-ID: <1993Aug21.165831.18873@wb6hqk.uucp>
Source record: 119767

In article <254adb$9qd@usenet.INS.CWRU.Edu> dq528@cleveland.Freenet.Edu (Bret Berger) writes:
>
>I'm working on a data logger/radio telemetry design and struggling with
>the modem portion of the project. I'll be using an off the shelf UHF or
>VHF FM tranceiver. The uC is a 68HC11. The amount of data to be
>transmitted is low so 1200 baud FSK, ala ham TNC-2, modulation seems
>reasonable. My initial scheme is to use the same demodulation circuit
>as the TNC-2 clones; an XR2211. Modulation would be done in firmware,
>then low-pass filtered to generate 1200Hz/2200Hz. Design priorities
>are: 1) Low parts count, 2) Low power (source is solar panel/lead-acid
>battery), 3) No (or little) manual calibration (read: no pots), 4) Cost.
>
>Questions to anyone who cares to respond are:
>
> *Does this seem like a reasonable approach? I'm commited to the
>HC11, but no other parts.

I would seriously consider a micropower TNC-2. They consume around 40 ma
and work! Hacking the existing code to include the telemetry front end
would be considerably easier than starting from scratch with the 'hc11.
Compatibility with AX-25 would be far more likely which could simplify testing.
In addition, you could make your design mods and firmware to the ham community
unless it's prohibited for business reasons.
>
> *Is FSK the optimal type of modulation here? Given the
>capabilities of the HC11 should I look at other modulation approaches
>which might require less supporting circuitry?

Existing 1200 bps ax-25 systems generally use an Audio Frequency Shifted
subcarrier on FM modulated onto the RF carrier. The 9600 bps systems in
common amateur use are direct FM which has better noise performance but
often requires modifactions to the radios. At 1200 bps, IF passband width
is'nt likely to be a problem unless you want it optimized and direct FM
would be easier to implement with the 'hc11.
>
> *Am I using the HC11 to full advantage? It will be lightly loaded
>with data collection tasks. Might the built-in A/D be used for
>demodulation?

The 'hc11 has sufficent A to D and processing bandwidth to implement the
entire modem but it's quite a lot of trouble unless you go to a coherent
modulation format that can benefit from the approach. The Texas Instruments
TCM3105 modem chip used in the micropower TNC's is far from optimal but
works, consumes just a few ma and requires minimal design and debugging

effort.
>
> *Would it be overkill to use a switched-capacitor filter IC to

Yes, it's overkill. A simple passive filter is more than adequate. The
'3105 has a built in transmit bandlimiting filter.

>low-pass filter the digitally modulated output signal? It seems a
>simple passive filter would leave too much energy in the harmonics.

>
> *As I have no requirements for compatibility with other systems, I
>thought I'd pick and choose pieces of AX.25 for my packet protocol.
>Features on the prototype will be bare-bones but minimally include:
>error detection/re-transmission and packet "digipeating". This is the
>"How would you change AX.25?" question. Forward error correction?
>HDLC?

From a theoretical point of view, AX-25 sucks! It is well established
and understood in the sense that it's weaknes's and bugs are well known.
I would strongly reccommend it's use unless you are going to consider MAJOR
protocal improvements including FEC. Some of the TCP/IP implementations
around many advantages over AX-25 in complex systems and are also widely
available but tend to require far more processing power and storage than
your system is likely to provide.
>
> *Book suggestions? Magazine article suggestions? Places to look
>for similar circuits or ("C") source code?
>
>Thanks in advance for any comments,
>
bart

bart@wb6hqk.ent-img.com

452. Julieboard part sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-21 19:56:03 UTC
From: kc4zvw@vicstoy.UUCP
Message-ID: <1993Aug21.195603.9223@vicstoy.UUCP>
Source record: 119668

In an article of 73 mag (August), there is a project for a DDS synthesizer. The parts list includes a Harris HSP45102 and a CA3338AE. A previous message mentioned Wyle Labs as a source for these items. Can anyone post an address or telephone number for this or another supplier. Also specify the minimum order limits of supplier if known.

// David //

453. DC-grounds in modular construction

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-22 10:52:39 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <257j5n$ilt@cc.tut.fi>
Source record: 119669

Which is the prefered way to connect DC ground (and control signal grounds) to a modular construction (each function in a separate shielded box and RF-connections thru BNC/SMA connectors) ? Is it through the boxis or with separate grounding wires from each module to the power supply ?

The former works well if the shielded boxes are mounted on a metallic mounting frames *and* the module is allways in the box. This is not usually the case during construction and testing and the grounding would go through the coax shield (only if the coax is connected to a near by DC-grounded module).

In the latter case by connecting DC-power and DC-ground from each module to the power supply (by twisted pair cable to minimize RF-pickup), DC-ground is garanteed to be connected whenewer DC-power is connected. The problem is that there are lots of ground loops. Would a small inductance in the DC-ground leads break these ground loops and if so, how large should the reactance be at the operating frequency ? How about 1/4 wave (or 3/4, 5/4 etc.) long DC-power and DC-ground lines ?

Paul OH3LWR

Phone : +358-31-213 3657
X.400 : G=Paul S=Keinanen O=Elisa-Tampere A=ELISA C=FI
Internet: Paul.Keinanen@Telebox.tele.fi
Telex : 58-100 1825 (ATTN: Keinanen Paul)
Mail : Hameenpuisto 42 A 26
SF-33200 TAMPERE
FINLAND

454. Re: Julieboard part sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-22 16:11:30 UTC
From: jjw@seastar.org
Message-ID: <CC64z7.22n@seastar.org>
Source record: 119670

As quoted from <1993Aug21.195603.9223@vicstoy.UUCP> by kc4zvw@vicstoy.UUCP (David Billsbrough):

>
> In an article of 73 mag (August), there is a project for a DDS synthesizer.
> The parts list includes a Harris HSP45102 and a CA3338AE. A previous
> message mentioned Wyle Labs as a source for these items. Can anyone
> post an address or telephone number for this or another supplier. Also
> specify the minimum order limits of supplier if known.
>
> // David //

Dunno where Wyle Labs is, but the CA3338E *is* available from DigiKey,
for around $14-ish. Another part you'll need is the Coilcraft filter,
which Digikey doesn't carry either. Additionally, have you looked at
the circuit board artwork? Many of the traces are shorted together.
You'll have to buy a board from the author anyway, so it may be easier
to just get the whole kit (but there were no prices listed).

I'm trying to get a sample chip from my local Harris rep to play with.
It looks to be comparable to the Q2220 I used, but with finer steps
and not-so-easy to parallel-load it. It would make a nice
DDS-controlled PLL for VHF work, though...

-->jjw n9jzw
--

John Welch, N9JZW

455. Yagi antenna computer design doesn't match "the book"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 12:05:29 UTC
From: millar@mervax.sanders.lockheed.com
Message-ID: <millar.42.0@mervax.sanders.lockheed.com>
Source record: 119672

I entered the free space element lengths and spacings for K1FO's 19
element 2 Meter Yagi from the 1993 ARRL Handbook. The text description says
it peaks in gain at 144.7 MHz. But, the YAGIMAX2 software says it peaks at
about 147 MHz.

This much error seems too much to do high optimized VHF/UHF antenna design.

Does anyone have an explanation? Using the free space dimensions
eliminates any boom or mast effects. Is it possible that YAGIMAX's
approximations (made for speed) have affected the results too much?

Thanks in advance...

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

456. Q: Project 3?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 12:34:15 UTC
From: bora@circhp3.epfl.ch
Message-ID: <25adg7$6v5@info.epfl.ch>
Source record: 119671

I have missed the third project!

Can it be posted again? Can anyone send me a copy?

bora

457. Re: QRP type kits with DDS?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 14:15:47 UTC
From: dfeldman@teal.csn.org
Message-ID: <CC7uAC.CIs@csn.org>
Source record: 119674

In article <CC10MB.CxC@hpcvsnz.cv.hp.com> davidc@lsid.hp.com (David Cook) writes:
>Are there any QRP type kits out there that use Direct Digital Synthesis for
>the VFO? Adding DDS to the C.M. Howes 10 & 15 meter CW/SSB kit would be just

I'd vote for a DDS-based replacement VFO for the Ten-Tec Argonaut 509. It (the Argonaut) has a simple 5-range, bandswitched VFO (no heterodyne xtals), and there should be enough room inside for a small shielded PC board and perhaps an RS-232 connector in the back. The wafer of the bandswitch that selects the VFO coil could probably be comandeered for selecting DDS mode, and the RIT control is a single analog input to the VFO module that could be fed to an 8-bit ADC (perhaps use a 68HC11 CPU w/ EEPROM to control the DDS). It would make an interesting project - I think it's what Ten-Tec should have built when they hatched the "Argonaut II" instead.

73 Dave WB0GAZ

458. Re: Yagi antenna computer design doesn't match "the book"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 14:27:43 UTC
From: glenne@sad.hp.com
Message-ID: <CC7uu7.In6@srgenprp.sr.hp.com>
Source record: 119673

Jeffrey R. Millar (millar@mervax.sanders.lockheed.com) wrote:
: I entered the free space element lengths and spacings for K1FO's 19
: element 2 Meter Yagi from the 1993 ARRL Handbook. The text description says
: it peaks in gain at 144.7 MHz. But, the YAGIMAX2 software says it peaks at
: about 147 MHz.

: Does anyone have an explanation? Using the free space dimensions

I have no experience with YAIMAX2 but...

Do the gains/patterns agree fairly well? If so, is it possible that
the model isn't properly handling the effects of a conductive boom
(assuming elements are mounted using one).
I expect modelling Long yagis is a fairly demanding test of a program
however if it gets the gain and pattern right it could be something as
simple as this.

Glenn "All models are wrong; some are useful" Elmore n6gn

459. Ramsey FM transmitter kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 18:05:07 UTC
From: chen.roch817@xerox.com
Message-ID: <1993Aug23.180507.14409@spectrum.xerox.com>
Source record: 119679

I recently bought one of the kits that Ramsey Electronics puts out. I figure I would start out with a small project and work to a bigger one. I put the kit together and I don't think it works. It's supposed to transmit on FM somewhere between 88-108 Mhz. It's very low power so it's legal. Anyhow when I apply power to it. I tuned my walkman up and down the 88-108 Mhz and got nothing. I also adjusted the output transmitter on the kit up and down too. There is also a potentiometer for Audio gain. I ju

st set that to the middle.

My question is how a beginner would begin to determine what the problem is? Do I have to go out and buy alot of fancy and expensive equipment? Is there anything I can measure with my analog multimeter?

Thanks,
Dan N2PKE
chen.roch817@xerox.com

460. Tx/Rx Interference?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 18:06:43 UTC
From: mark@alf.cooper.edu
Message-ID: <1993Aug23.180643.3077@alf.cooper.edu>
Source record: 119675

Hello,

I am interested in installing a 75 MHz transmitter alongside a 72 MHz
receiver in a radio controlled airplane. The 72 MHz band is the
"Aircraft Only" control frequency. This receiver has a wire antenna
approximately 3 feet long. Would a 75 MHz "surface" transmitter
with a similar antenna alongside the receiver's antenna create
interference problems?

Thanks very much!

;
; Mark Balch The Cooper Union
; mark@alf.cooper.edu (212) 353-4350
; mark@magnum.cooper.edu The Future is MPP!
;

461. Combining filters to make a bandpassRe:

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 21:15:48 UTC
From: jjw@seastar.org
Message-ID: <CC8DqE.2Ku@seastar.org>
Source record: 119681

I'm looking for a way to put 2 filters in series, a high-pass and a low-pass, to make a wide bandpass RF filter. When I just plugged one into the other, it seemed to not work even though each individual filter did work.

I would like to use this as both an output and input filter, running upwards of 20 watts through it. Should I put an isolation transformer (1:1) in the middle? Any help would be appreciated.
-->jjw

--

John Welch, N9JZW

462. SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 22:04:09 UTC
From: "Eleen N. Kamas" <ee2g+@andrew.cmu.edu>
Message-ID: <ogSHvNm00jWR4KNnRP@andrew.cmu.edu>
Source record: 119676
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

I have a SWR meter that was designed to be used for HF frequencies.
Is it possible to modify it to work on 2 meters?

It is a older version of the current Radio Shack SWR/FS meter
model number: 21-523. Now I realize that many people make cheep meters
(i.e. Radio Shack and MFJ inc.), but I need a project to bide me over
while waiting for my Code-Freed Tech. ticket to arrive
(9.5 weeks and counting!). It is also more in keeping with our hobby
to self-educate and to have "made it myself".

If someone would like to wax-eloquently on what exactly a SWR meter
is really measuring in term that this Electrical Engineer can understand,
I sure would appreciate it.

73's all
and be seeing you on the RF soon,
I hope!
Chuck Kamas
ee2g+Charles@andrew.cmu.edu

463. Re: Yagi antenna computer design doesn't match "the book"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 22:18:32 UTC
From: millar@mervax.sanders.lockheed.com
Message-ID: <millar.2.0@mervax.sanders.lockheed.com>
Source record: 119677

In article <CC7uu7.In6@srgenprp.sr.hp.com> glenne@sad.hp.com (Glenn Elmore) writes:
>From: glenne@sad.hp.com (Glenn Elmore)
>Subject: Re: Yagi antenna computer design doesn't match "the book"
>Date: Mon, 23 Aug 1993 14:27:43 GMT

...some stuff deleted for brevity...

> If so, is it possible that the model isn't properly handling the effects
> of a conductive boom (assuming elements are mounted using one)?

The antenna elements are specific in "free space" lengths. That is
with out concern for booms at all. The corrections for mounting get
added after working out the design in the free space mode.

The YAGIMAX program also works with free space dimensions. There is
a separate program (called TAPER) to convert from real mounted
elements to free space or from free space to real mounted elements.

I figured the best test would be with these free space dimensions.
The text mentioned that Steve (K1FO) optimized the designs with
one of the antenna modeling programs and then verified the designs
and element mounting corrections with many real antennas.

My guess is that YAGIMAX only approximates the antennas, the
readme file mentions a 0.3% error. 147/144.7 is about 2% error
which is too much.

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

464. Re: Tx/Rx Interference?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 22:35:49 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug23.223549.21515@ke4zv.uucp>
Source record: 119678

In article <1993Aug23.180643.3077@alf.cooper.edu> mark@alf.cooper.edu (Mark_Balch) writes:
>Hello,
>
>I am interested in installing a 75 MHz transmitter alongside a 72 MHz
>receiver in a radio controlled airplane. The 72 MHz band is the
>"Aircraft Only" control frequency. This receiver has a wire antenna
>approximately 3 feet long. Would a 75 MHz "surface" transmitter
>with a similar antenna alongside the receiver's antenna create
>interference problems?

It could. It depends on the selectivity of the receiver's front
end stages, and the amount of power from the transmitter. Paralleling
the antenna wires is likely not a good idea as it would increase
coupling, and likely distort the antenna patterns.

If the transmitter is relatively low power, as we would assume,
then a simple lumped constant duplexer could allow sharing of
the single antenna wire. At low power levels, 10 mw or so, the
duplexer could be kept under a couple of ounces. A 3 MHz split
is easily possible.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

465. "Julieboard" info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-23 23:49:59 UTC
From: bills@inqmind.bison.mb.ca
Message-ID: <1PeR9B2w165w@inqmind.bison.mb.ca>
Source record: 119684

I just got a (paper) letter from the author of the Julieboard article;
the blank board is $33, an assembled and tested unit is $160 with a
33 MHZ synthesizer in it, and the "partial kit" with pcb, manual, filter,
and DDS chip is $115. All prices in $ Canadian, and add $5 or so for
shipping. Oh, and 7% contribution to reducing the national debt.
Bill
(who isn't even (yet) a satisfied customer, just curious)

bills@inqmind.bison.mb.ca
The Inquiring Mind BBS, Winnipeg, Manitoba 204 488-1607

466. Re: SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 02:12:40 UTC
From: gary@ke4zv.uucp
Message-ID: <1993Aug24.021240.22976@ke4zv.uucp>
Source record: 119682
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

In article <ogSHvNm00jWR4KNnRP@andrew.cmu.edu> ee2g+Charles@andrew.cmu.edu writes:
> I have a SWR meter that was designed to be used for HF frequencies.
>Is it possible to modify it to work on 2 meters?

Yes, but all that's left of the original when you're done is the case
and meter movement. As I recall it's a form of the Monimatch circuit.
Basically that's a short transmission line segment that has an additional
wire inside the shield for a short distance. That wire is terminated
at one end by a resistor of the line's characteristic impedance, and
by a diode and a meter on the other end. There's usually a switch
so you can swap the line ends to measure forward and reflected signal
components, and a variable resistor to set the sensitivity of the
unit. This circuit can be used at VHF if the construction symmetry
is good enough, and if strays are controlled well enough. Unfortunately,
this style of instrument is frequency sensitive, and the pickup wire
offers too much coupling at VHF in order to get a reading at HF. And
this particular meter doesn't maintain symmetry, or control strays
very well. So you need to build a new line section to get reliable
readings at VHF.

> It is a older version of the current Radio Shack SWR/FS meter
>model number: 21-523. Now I realize that many people make cheep meters
>(i.e. Radio Shack and MFJ inc.), but I need a project to bide me over
>while waiting for my Code-Freed Tech. ticket to arrive
>(9.5 weeks and counting!). It is also more in keeping with our hobby
>to self-educate and to have "made it myself".
>
> If someone would like to wax-eloquently on what exactly a SWR meter
>is really measuring in term that this Electrical Engineer can understand,
>I sure would appreciate it.

Well what we usually actually measure is the line VSWR, the Voltage
Standing Wave Ratio, though we could equally measure the Current Standing
Wave Ratio, and we do in different kinds of bridge circuits. First a
few basics.

A transmission line has a characteristic impedance. That's the impedance
a generator would see if it impressed a pulse on an infinitely long line
segment. This impedance exists because of the distributed inductance and
capacitance of the line. Since that's purely reactive, no power is dissipated
in the line, but since the line is infinitely long, it appears to the
generator that the power has been dissipated in the "load" presented by
the line. If we replace the infinite line segment with a finite length
line and terminate it in a resistor of the line's characteristic impedance,

from the generator's point of view nothing will have changed. That's called a perfectly matched line. As far as the generator is concerned, it's looking directly into a resistor of the line's characteristic impedance. If you take a voltage reading anywhere along the line, you'll get a value that's related to the generator's power by the relation E=sqrt(P*R) where E is the voltage, P is generator power, and R is the line characteristic impedance. Similarly, if you measured the current anywhere along the line, I=sqrt(P/R), and the current and voltage waveforms will be *in phase*. Remember we're dealing with AC here, and AC across a resistor will be in phase, and to the generator the line looks like a resistor.

Now suppose the line is *not* terminated in a resistor of the line's characteristic impedance. Let's first look at two extreme cases. If the line is *open*, then current will be zero and voltage will be maximum, a very high impedance point. Note that the voltage and current are now out of phase by 90 degrees. When the voltage collapses, it will induce a current in the wire that will travel in the opposite direction from the incoming wave, or forward wave, back toward the generator. Since it's moving along a line with a characteristic impedance, it will in turn generate a voltage on the line, also travelling toward the generator. Voltage and current waves will once again be in phase, but travelling in a different direction. This is called the reflected wave. If the line is shorted instead of open, then voltage goes to zero, and current becomes maximum, a very low impedance. The same things happen to the waves as in the open case except that the signs of the phases are reversed. Now if we take the case where the line is terminated in a finite impedance, but different from the line's characteristic impedance, we'll get part of the incident wave absorbed in the load, and part reflected by the mismatch.

Ok, now what do we see if we measure the voltage along the line? Since we now have two waves, forward and reflected, moving along the same line, and that line has a characteristic impedance, we'll measure a voltage at any given point on the line that's the vector sum of the two waves at that point. Since the two waves differ in phase by the distance they've travelled along the line, we won't see a constant voltage. Instead we will see a sinewave variation of the voltage as we move along the line. Since the line is of fixed length, the travel time differences between the waves will be in a fixed relationship and this sinewave will appear to *stand* still on the line. Hence Standing Wave. The relationship between the forward and reflected voltages can be expressed as a ratio in the following form, VSWR=(Vf+Vr)/(Vf-Vr). Note that for a perfectly matched line Vr=0 and VSWR becomes simply Vf/Vf or 1. So an SWR of 1:1 means a perfect match.

Now this would all be pretty academic if we couldn't separate Vf and Vr so we could measure them. Various bridge type circuits can be used to separate the two wave components by taking advantage of non-reciprocal properties of the bridge circuit. We can also take advantage of the properties of travelling waves in the monimatch

to do the same thing. It's difficult to show how to build a VSWR meter without drawings, so I'll refer you to the instrument on page 27-11 of The ARRL Antenna Book for a line section that will work at VHF/UHF and that can be made out of ordinary copper plumbing fixtures.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

467. Re: Ramsey FM transmitter kit?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 02:13:53 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <25bth1$eaq@hobbes.cc.uga.edu>
Source record: 119680

Without the circuit diagram I can't make specific recommendations,
but you might want to see that all the ICs and transistors are getting
power (by making voltage measurements).

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

468. Re: Electro-nostalgia CHALLENGE; was: Re: Why aren't electronics cool any more?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 08:59:45 UTC
From: motoyama@harl.hitachi
Message-ID: <MOTOYAMA.93Aug24175945@harlgw92.harl.hitachi>
Source record: 119683
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <253afaINN9md@rave.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:

>These are subminis.

Yes. I constructed a superhet with five 5678's. All parts except tubes are for transistor radios. The sensitivity was good. But I got troubled with micro-phonic noise emanated from the tubes. The noise offen lasts for more than ten seconds! I guess very fine filaments of tubes vibrate in high vacuum environment. Vibration energy disipates only through inner loss of fillament material.

Hiroshi Motoyama
--
Hiroshi Motoyama

469. Re: "Julieboard" info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 13:03:01 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Aug24.130301.21721@mnemosyne.cs.du.edu>
Source record: 119685

bills@inqmind.bison.mb.ca (Bill Shymanski) writes:

>the blank board is $33, an assembled and tested unit is $160 with a
>33 MHZ synthesizer in it, and the "partial kit" with pcb, manual, filter,
>and DDS chip is $115.

Ouch! Ouch! Does that seem a bit steep to anyone else (even accounting
for Canadian/US exchange rates and small quantities)? Add 7%, and we're
up to $123 plus a nickel.

To be fair, I haven't priced out the parts yet -- but I have an issue of
Computer Craft at home with an article on a 1-10 MHz frequency synthisizer
for about $50. I'll dig it up and post the issue date if there's any interest.

Sorry Julie, but I think I'll pass. :-(

--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think every ham
lkollar@nyx.cs.du.edu | should have to learn it.
"You mean you came back from the dead, to tell me I'm *odd*?"

470. Packet Modem Kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 14:05:02 UTC
From: chbeck@anl.gov
Message-ID: <chbeck-240893091758@chbmac01.el.anl.gov>
Source record: 119686

Our club will be putting out some kits based on a modified
'baycom' type design. These will be cheap, around $30. They
should be available soon. Anyone intested?

--

"If I told you all that went down, it would burn off both your ears..."
-Robert Hunter/Jerry Garcia

These thoughts are only my own. CHBeck@anl.gov

471. DTMF decoder and dopler circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 16:26:34 UTC
From: lawrence@combdyn.com
Message-ID: <1993Aug24.162634.22830@combdyn.com>
Source record: 119695

I'm looking for sources of circuits describing construction of tone alert modules and Dopler systems.

Two reasons.

I want to build a module that I can plug into the earphone jack of my HT (or scanner), to listen for "Long Tone Zero" being sent out over the main city repeater. That way I don't have to have the speaker nattering at work (especially when you deal with co-workers that don't like noise) all the time, but I can hear get some kind of signal when somebody needs help. Actually, it might not be "Zero" that we use as the alert tone, but it'll be a DTMF digit of sometype. The module should give both audible and visual indication, and either time out or be resetable.....8-)

The other project is to hunt for a ghost in our city. He's constantly kerchunking all the repeaters in town, keying over top of people, jamming, playing with the Link and the autopatch. He never talks on the air. And, he doesn't stay on for very long....so we can't sniff him out. So, we want to throw together some dopler systems quickly to get an idea of where he's at.

--
--EMAIL----------PHONE----------FAX----------
| WORK: lawrence@combdyn.com | (403)529-2162 | (403)529-2516 | CallSign
| HOME: dreamer@lhaven.uumh.ab.ca | (403)526-6019 | (403)529-5102 | VE6LKC
----
disclamer = (working_for && !representing) + (Combustion Dynamics Ltd.);

472. Re: SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 16:58:57 UTC
From: jfw@ksr.com
Message-ID: <31074@ksr.com>
Source record: 119687
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

ee2g+@andrew.cmu.edu (Eleen N. Kamas) writes:
>I have a [Rat Shack] SWR meter ... designed to be used for HF frequencies.
>Is it possible to modify it to work on 2 meters?

Not likely, not without gutting it and replacing the electronics entirely.
SWR meters below 30 MHz usually use a toroidal sense transformer whose
sensitivity drops with frequency; my Heathkit SWR meter came with a second
toroid for those who wanted to build it as a 6-meter (only) version. 144MHz
is high enough that you really start having to worry about parasitic inductance
and capacitance, and the usual scheme is difficult to make work. However,
there is a scheme that takes advantage of parasitic inductance for VHF SWR
meters (called the Monimatch); probably some version of the ARRL Handbook
has it (go buy one, now, just on general principles), though the 1984 copy I
keep in my office doesn't. The Monimatch is essentially a transmission-line
transformer built on epoxy circuit board.

>
> If someone would like to wax-eloquently on what exactly a SWR meter
>is really measuring in term that this Electrical Engineer can understand,
>I sure would appreciate it.
>
If you *really* want your eloquence waxed, go buy a copy of Maxwell's
"Reflections", sold by the ARRL (in fact, buy one even if you DON'T), but
here goes: an SWR meter measures the power going to the load and the
power reflected back down the transmission line by the load. (Well, OK,
it usually measures the voltages, but that's just a detail.) Some meters
use a bridge scheme to obtain a ratio of the two to directly read SWR (which
is equal to (Vf+Vr)/(Vf-Vr)), others just display forward and reverse power
and let you figure it out (very fancy meters use crossed needles on one meter
face to allow you to read forward and reverse power WHILE directly reading
SWR). Where does the reflected power come from? While the forward wave is
travelling up the line, it has a definite voltage and current whose ratio is
set by the characteristic impedance of the line; each successive bit of the
line "accepts" the power from the previous bit and offers it the same ratio.
When the power hits the load, if the load has the same characteristic
impedance, then it can accept all the power presented; if not, however,
then suddenly V/I no longer equals R, and something has to give; the load
wind up accepting some of the power, and the rest reflects back down the line,
possibly with a phase shift as well. When that reflected wave hits the
generator (in the case of a transmitter, the generator's impedance is usually
not even close to the characteristic impedance it wants to see presented to
it), the power entirely (or nearly so) reflects back toward the load, cycling
back and forth until cable losses make it vanish.

The job of a Transmatch, by the way, is not to make the antenna's impedance equal to 50 ohms (which it can't unless it is physically located at the antenna feedpoint); it is to present the transmitter with a 50-ohm load (a 50-ohm transmission line with a mismatched load will have an effective impedance of something other than 50 ohms). Most solid state transmitters generate power most efficiently when presented with their design impedance, and contain high-SWR shutdown circuitry to avoid burning up by inefficiently generating RF power when presented with the wrong load.

John, WB7EEL/1

473. Re: "Julieboard" info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 17:56:49 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Aug24115649@m2000.dseg.ti.com>
Source record: 119688

In article <1PeR9B2w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:

>
> I just got a (paper) letter from the author of the Julieboard article;
> the blank board is $33, an assembled and tested unit is $160 with a
> 33 MHZ synthesizer in it, and the "partial kit" with pcb, manual, filter,
> and DDS chip is $115. All prices in $ Canadian, and add $5 or so for
> shipping. Oh, and 7% contribution to reducing the national debt.

Just checked the exchange rate. A U.S. Dollar will buy you 1.31 canadian dollars. That works out to:

o The blank board is $33 ($25 U.S.)
o An assembled and tested unit is $160 ($122 U.S.)
o The "partial kit" is $115 ($88 U.S.)

Not quite so bad.

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

474. Re: SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 19:39:33 UTC
From: alanb@sr.hp.com
Message-ID: <CCA3xy.HH0@srgenprp.sr.hp.com>
Source record: 119689
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

"Eleen N. Kamas" (ee2g+@andrew.cmu.edu) wrote:
:
: I have a SWR meter that was designed to be used for HF frequencies.
: Is it possible to modify it to work on 2 meters?
:
Try it! I have found that many of the cheap SWR meters work passable
well on 2 meters as-is. If it reads close to 1:1 into a good 50-ohm load,
and reads infinity into an open circuit, then it is probably usable.

AL N1AL

475. MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 21:38:37 UTC
From: rps@cray.com
Message-ID: <1993Aug24.163838.27260@walter.cray.com>
Source record: 119691
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

It`s just like the federal Government, "You can't know something unless you already know it".

I find it interesting that you can't join MARS unless you have a radio that can work 2 of their HF frequencies yet you can't modify your radio to work these frequencies unless you have a MARS call sign. :-)

MARS (Military Affiliate Radio System) Frequencies.

Here is a list of frequencies givin to me in a pamphlet sent by the Airforce MARS chief. Frequencies in brackets were derived from other sources. It would be nice to have this added to the FAQ. :^)

```
--------------------
+ Air Force MARS +
--------------------

HF - 3190.5 kHz
HF - 4590.0 kHz
HF - 4832.0 kHz
HF - 7313.5 kHz
VHF - 49.980 mHz
VHF - (148.125 mHz packet)
VHF - 143.45 [(-1.3 split)], and other VHF Freqs.

-------------
+ Army MARS +
-------------

HF - 3348.5 kHz
HF - 6997.5 kHz
HF - 14403.5 kHz
HF - 40.95 mHz
VHF - 143.99 mHz [? Split] and Other VHF Freqs.

--------------------
+ Navy-Marine MARS +
--------------------

HF - 3190.5 kHz
HF - 4042.5 kHz, (4003.5 kHz)
HF - 7382.5 kHz, (7363.5 kHz, 7500 kHz)
HF - 13975.5 kHz
HF - 14385.0 kHz
HF - 20998.5 kHz
VHF - 148.375 mHz [? split],
```

VHF - 148.975 mHz [? split], and other VHF Freqs.

476. INSTRUCTION/OPERATORS MANUALS up for grabs

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 21:57:12 UTC
From: lockhart@mothra.nts.uci.edu
Message-ID: <2C7A8EB8.5210@news.service.uci.edu>
Source record: 119690
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

On Date: 8 Aug 93 00:11:44 GMT I wrote: I have the following
INSTRUCTION/OPERATORS MANUALS up for grabs:

NOTE: "Some manuals are still unclaimed."

HY-GAIN THUNDERBIRD (TH3Mk30 THREE ELEMENT HAM ANTENNA
Still up for grabs

HY-GAIN BALUN MODEL No. BN-86
Still up for grabs

CDE HAM II ROTOR
Original still up for grabs if I don't get an immediate SASE
from Robert Wise, WB5KXH
Photocopy sent to: Russ Schroeder, W2DYY

HY-GAIN 18HT HY-TOWER 10-80 METER:
Sent to: Doug Snowden, N4IJ

SPECTRONICS DD-1C DIGITAL FREQUENCY DISPLAY (used in conjunction with
the COLLINS KWM2/2A
transceivers).
Sent to: Gary Bishop, NQ0V

All items below sent to: Steve Miller, KD2ED. Steve said he'd be more
than happy to photocopy manuals for anyone else. Just send him an
SASE.

COLLINS KWN-2 and KWM-2A TRANSCIEVERS

COLLINS 312B-4 & 312B-5 STATION CONTROLS

COLLINS SM-3 MICROPHONE

MAGNUM SIX RF SPEACH PROCESSOR

All INSTRUCTION/OPERATORS MANUALS are in various states of condition.
Some are in good condition and some are in poor condition.

The intent is to give these INSTRUCTION/OPERATOR MANUALS to an
individual or entity who ACTUALLY has the equipment.

The first person to send me e-mail gets the booty. Please send a
separate e-mail request for each INSTRUCTION OR OPERATORS MANUAL. You
will be asked to send a SASE (large manila or other envelope) with the
appropriate amount of U.S. postage to me c/o the address in my .sig
file.

For those of you who are interested, the reason these INSTRUCTION/
OPERATOR MANUALS are available is because some

$(%&*#+=$_$)* IDIOT

trashed (read distroyed) the University of California, Irvine, WB6KGN
amateur radio club ham station. All of the equipment was rendered
unusable. There wasn't anything to salvage (except the
instruction/operator manuals. So, there you have it.

Don't be suprised if it takes me a while to get back to you. I am
very busy these days. All requests will be answered.

Good luck to one and all.

73,

~jack_

/\/\/\

477. How to make one (was: SWR Meters)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-24 22:02:49 UTC
From: geertj@ica.philips.nl
Message-ID: <1993Aug24.220249.9162@ica.philips.nl>
Source record: 119694
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

alanb@sr.hp.com (Alan Bloom) writes:

>"Eleen N. Kamas" (ee2g+@andrew.cmu.edu) wrote:
>:
>: I have a SWR meter that was designed to be used for HF frequencies.
>: Is it possible to modify it to work on 2 meters?
>Try it! I have found that many of the cheap SWR meters work passable
>well on 2 meters as-is. If it reads close to 1:1 into a good 50-ohm load,
>and reads infinity into an open circuit, then it is probably usable.

If the SWR 'engine' isn't usable (in my experience, it usually isn't),
you could try to make a new engine. I did something like:
1. Take a small piece of RG213 (or other, requirements are
cable as thick as possible; solid dielectricum, woven braid)
2. Gently remove the outer isolation (gently! has to be put back later on)
Cutting on the length side of the cable gives best results.
3. Push the outer braid in (like a harmonica), so the inner diameter
raises and the solid inner coax cable can be easily removed;
4. Put two thin, isolated wired wires (e.g. teflon 'wire wrap' wire)
in parallel to the inner conductor of the coax (the part you took out in
step 3); the ends of the wire should be accessible later
5. Re-apply the braid you took out in step 3. Make shure that the 4 ends
of the wire you added remain accessible; peel them trough the braid.
Make shure that you re-apply the braid as neatly as possible; the
impedance of the coax is determined by this and thus the accuracy
of your instrument!
6. Re-apply the outer isolation as neatly as possible. This helps to
improve your work from step 5. Make provisions for the wires you added.
7. Put the coax between the two connectors of the original SWR casing.
NEATLY. No pigtails please; make it in a VHF fashion.
The accuray of your device is determined by the impedance of it;
the 'modified' coax and the connection to the connectors will disturb
the impedance of the unit and that should be as less as possible!
8. Hook up the two sense wires as in the original scheme: on the left,
a trimming pot on wire 1 and a diode detector on wire 2; on the
right, another diode detector on wire 1 and a trimming pot on
wire 2 (thus, cross).
The original unit probably has long wires to a PCB containing these
components in the original setup; this is no longer possible
(remember, we're talking VHF). Apply them in such a way that the
VHF 'hot' sense wires are as short as possible (a few mm's at
most). The DC wires (the output of the detectors) is, of course,
much less of a problem.
9. You probably should swap the diodes originally used in the detectors

for something better. Use low-voltage drop diodes; schottky or such. I have used OA91 diodes but they are probably not known in the USA. They are low-capacity, high-speed, low-drop detector diodes for AM video signals (at worst, you have to take them out of 2 TV sets; as an added bonus, the other components are now also available for other projects :-)

Then, wire the rest of the SWR meter as you normally do, and adjust the two puts on the sense wires.

On short, what you have done is added two sense wires to a piece of coax. That piece of coax has to remain 'coax' as much as possible, hence my emphasis on _short_ wires. The better the coax is restored to its iriginal form, the better the meter. (that is why I advised *thick* coax; the changes have less impact on the characteristics of this than on thin coax).

This, of course, doesn't make up for a bird meter. It also doesn't cost nearly as much. I used one in my student years; I only replaced it a year ago when I needed something for higher frequencies, was too lazy to build it, and got away with it because I now could afford to buy one instead :-).

This makes up for a nice weekend project. You probably ruin the first piece of coax; since only small lengths are involved, that's no problem.

Hope this helps, 73,

Geert Jan, PE1HZG

478. Re: Tx/Rx Interference?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 01:00:51 UTC
From: mark@alf.cooper.edu
Message-ID: <1993Aug25.010051.19571@alf.cooper.edu>
Source record: 119692

> If the transmitter is relatively low power, as we would assume,
> then a simple lumped constant duplexer could allow sharing of
> the single antenna wire. At low power levels, 10 mw or so, the
> duplexer could be kept under a couple of ounces. A 3 MHz split
> is easily possible.

Well, it is my understanding that the receivers used for radio controlled airplanes are usually not of the best technology. My receiver/transmitter is an FM unit, so it's not among the worst out there. Still, others have voiced concern that there would be significant interference. I do not know what the transmitter's output is, but I think it's much higher than 10mw. These xmitters are good to a mile on a good day (not that you let an airplane get nearly that far away!).

Would any interference between 75 MHx and 72 MHz be reduced if the split was 72 MHz and 27 MHz?

Thanks!

;
; Mark Balch The Cooper Union
; mark@alf.cooper.edu (212) 353-4350
; mark@magnum.cooper.edu The Future is MPP!
;

479. Re: Combining filters to make a bandpassRe:

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 01:25:35 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Aug25.012535.18770@mksol.dseg.ti.com>
Source record: 119693

John Welch (jjw@seastar.org) wrote:
: I'm looking for a way to put 2 filters in series, a high-pass and a
: low-pass, to make a wide bandpass RF filter. When I just plugged one
: into the other, it seemed to not work even though each individual
: filter did work.

: I would like to use this as both an output and input filter, running
: upwards of 20 watts through it. Should I put an isolation transformer
: (1:1) in the middle? Any help would be appreciated.
: -->jjw

: --

: John Welch, N9JZW

Filters hate to be cascaded. The easiest way to make them behave
is to put an attenuator between them (resistive) as long as you
can afford the loss. 3dB should be enough. Otherwise use an isolation
amp. I dont think a transformer will do it, but then I never tried.
Art.

480. Re: MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 11:49:39 UTC
From: dls@genrad.com
Message-ID: <25fjkjINNk6f@sweetpea.genrad.com>
Source record: 119696
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <1993Aug24.163838.27260@walter.cray.com> rps@cray.com (Russell P. Starksen) writes:
>Here is a list of frequencies givin to me in a pamphlet sent by
>the Airforce MARS chief. Frequencies in brackets were derived
>from other sources. It would be nice to have this added to the FAQ. :^)
>
>--------------------
>+ Air Force MARS +
>--------------------
>
>HF - 3190.5 kHz
>HF - 4590.0 kHz
>HF - 4832.0 kHz
>HF - 7313.5 kHz
>VHF - 49.980 mHz
>VHF - (148.125 mHz packet)
^^^^^^^
Really? I wasn't aware that CAP shared this frequency with MARS. Is this
really true? I do know that (per CAP National Boards two weeks ago) that this
frequency will be taken away from CAP within two years....

>VHF - 143.45 [(-1.3 split)], and other VHF Freqs.

Diana

--
->Diana L. (Syriac) Carlson dls@genrad.com Ham: KC1SP (Sweet Pea) <-
->I'D RATHER BE FLYING! P-ASEL, INST CAP: CPT, Freedom 690 Mobile<-
->AD ASTRA, PER ASPERA Airplane: None :-(<-
->GenRad, MS/6, 300 Baker Ave, Concord, Mass. 01742 (508)369-4400 x2459 <-

481. Re: "Julieboard" info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 12:18:59 UTC
From: wmeahan@ef0424.efhd.ford.com
Message-ID: <wmeahan.2.2C7B58B3@ef0424.efhd.ford.com>
Source record: 119697

In article <LINNIG.93Aug24115649@m2000.dseg.ti.com> linnig@m2000.dseg.ti.com (Mike Linnig) writes:
>From: linnig@m2000.dseg.ti.com (Mike Linnig)
>Subject: Re: "Julieboard" info
>Date: Tue, 24 Aug 1993 17:56:49 GMT

>In article <1PeR9B2w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:

>>
>> I just got a (paper) letter from the author of the Julieboard article;
[details deleted]

The original article in this thread came and went from our newsserver while I was on vacation. Could someone please e-mail me a copy (or repost if appropriate)?

TNX ES 73 DE WA8TZG

Bill Meahan |EFHD Information Systems Staff
Computer Applications Engineer |Ford Motor Company
wwm@ef0424.efhd.ford.com |
|I'm not paid to speak for Ford!

482. Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 13:31:43 UTC
From: dbraun@ilx049.intel.com
Message-ID: <25fpjv$1fbn@ilx018.intel.com>
Source record: 119700

The Mini-Circuits company plugs their "740 page RF-IF Designer's Handbook".
It this a worthwhile addition to the homebrewer's bookshelf? Does
anyone know the best way to get one from them, hopefully for free?

--
Doug Braun (N1OWU/4X)

Email: dbraun@inside.intel.com
Intel Mail: IDC1-41
iNet: 8-435-5069 Long Distance: 011-972-4-655069
Fax: 8-435-5999 Long Distance: 011-972-4-655999
Snail Mail: US: Other:
PO Box 311 Intel Israel, Ltd.
Mendham, NJ 07945 IDC1-41
Matam Scientific Center
Haifa, Israel 31015
---

483. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 15:16:03 UTC
From: gps19@herald.usask.ca
Message-ID: <25fvnj$1lp@tribune.usask.ca>
Source record: 119698
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
: I'm getting ready to do some free-lance designing, and would like to start
: a discussion...

: What kind of kits would you like to see offered by companies like Ramsey
: and others in the under-$40-per-kit class?

: What kinds of construction projects would you like to see featured in
: magazine articles?

: Suggestions, comments, free-for-alls invited...
: --
: :- Michael A. Covington, Associate Research Scientist : *****
: :- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
: :- The University of Georgia phone 706 542-0358 : * * *
: :- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

I would like to see plans for a simple surround sound processor
like I mentioned in my post on that subject>>>> Check it out. There
will be a test on this later. G...

484. Re: MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 16:01:53 UTC
From: ronk@cascade.ens.tek.com
Message-ID: <25g2dh$jui@zephyr.ens.tek.com>
Source record: 119699
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <25fjkjINNk6f@sweetpea.genrad.com>, dls@genrad.com (Diana L. Carlson) writes:
|> In article <1993Aug24.163838.27260@walter.cray.com> rps@cray.com (Russell P. Starksen) writes:
|> >VHF - (148.125 mHz packet)
|> ^^^^^^^
|> Really? I wasn't aware that CAP shared this frequency with MARS. Is this
|> really true? I do know that (per CAP National Boards two weeks ago) that this
|> frequency will be taken away from CAP within two years....

Yes, it is also a MARS frequency. We are a secondary user unless there is a SAR/DR in progress, then we become primary. Also, Washington Wing is not allowed to use the frequency because of interference with Canadian stations.

--
Ron Kirkpatrick
News Administrator/Postmaster
Tektronix, Inc
503-627-6707

485. Re: Julieboard part sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 16:06:17 UTC
From: mb@wpsun4.UUCP
Message-ID: <845@wpsun4.UUCP>
Source record: 119702

kc4zvw@vicstoy.UUCP (David Billsbrough) writes:
:
: In an article of 73 mag (August), there is a project for a DDS synthesizer.
: The parts list includes a Harris HSP45102 and a CA3338AE. A previous
: message mentioned Wyle Labs as a source for these items. Can anyone
: post an address or telephone number for this or another supplier. Also
: specify the minimum order limits of supplier if known.
:
: // David //

My local (Salt Lake City) Wyle Labs distributer is at (801) 974-9953. I don't know their main number. I paid $74.26 for two each of the HSP45102 and CA3338AE. I believe that divided up to about $20-$25 for the DDS chips and $12-$17 for the DACs. I ordered two Coilcraft filters directly from the author for $10 plus $2 postage.

Hope this helps.

--Michael Bendio, WT7J
mb@titan.wordperfect.com

486. Re: MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 17:14:07 UTC
From: weaver@kuttner.sfc.sony.com
Message-ID: <1993Aug25.101407@kuttner.sfc.sony.com>
Source record: 119701
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <1993Aug24.163838.27260@walter.cray.com>, rps@cray.com (Russell P. Starksen) writes:
|> It`s just like the federal Government, "You can't know something unless you
|> already know it".
|>
|> I find it interesting that you can't join MARS unless you have a radio
|> that can work 2 of their HF frequencies yet you can't modify your radio
|> to work these frequencies unless you have a MARS call sign. :-)

Um, surely this is mistaken?

A ham can do any doggone thing to his rig as long as he doesn't TRANSMIT
outside an authorized band.

You can modify your radio to work those frequencies any time; you just can't
actually work them until you have the MARS call sign.

[Not a ham, just play one on the radio.]
--
Eric Weaver Sony AVTC 3300 Zanker Road, 4th fl. SJ CA 95134 408 955-4904
& Chief Engineer, KFJC 89.7 Foothill College Los Altos Hills, CA 94022

487. Quadrature Modulators for QPSK

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 17:48:10 UTC
From: jf7wex@yumyum.sdj.miyagi.prug.or.jp
Message-ID: <JF7WEX.93Aug26024810@yumyum.sdj.miyagi.prug.or.jp>
Source record: 119704
Cross-posted to: rec.radio.amateur.packet,rec.radio.amateur.homebrew

The 2Mbps differentially encoded QPSK PCM audio standard
was proved to be used only for Japanese satellite broadcasting.
A few weeks ago, one of my fellow bought a chip similar
to Toshiba's that I pointed several months ago except
not including differential decoder and serial-parallel
converter coming from NEC. This chip was proved to work
at 10.7MHz input and to work on lower bit rate.

I am going to build a quadrature modulator which consists
of a Wilkinson power devider, two balanced mixers, and
a branched hybrid all parts on a epoxy fiberglass board
on 1.2GHz band.

For measureing frequency-amplitude(power deviding ratio)
characteristics of a branched hybrid, I made it.
Since a full-size plan was drawn on 1mm square paper and
all processes were done by my hands, maximal error of
line breadth came to 0.4mm. (each length is ok.) Precise
working would requir more accurate processing. I'll try
again using resisting tape.

It is measured using an improvised 1.2GHz VFO to feed signal,
a wave-length ruler (which consists of a variable length
coaxial resonator, a Schottky diode rectifier, a variable
resister for various sensitivity, and a meter.) to check
frequency, and a micro power meter to measure outputs.
However all sizes are caluculated for 1.29GHz, fed power was
just devided 1:1 at a little above 1.3GHz and then isolation
seemd good because the wave-length ruler did not sense at
the terminated isolated port.
I am very interested in its phase accuracy and the way
to put it to properly low not using expensive equipment.

By the way, I found a quadrature modulator chip for
home-use 240MHz digital wireless telephone. This internally
has a phase splitter and mixers, and must have phase accuracy
which is low enough.

Any advice is welcome.
Thanks in advance.

Ryuji Suzuki, JF7WEX
Packet Radio User's Group PRUG

488. Re: MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-25 18:09:11 UTC
From: ronk@cascade.ens.tek.com
Message-ID: <25g9s7$p0r@zephyr.ens.tek.com>
Source record: 119703
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <1993Aug25.101407@kuttner.sfc.sony.com>, weaver@kuttner.sfc.sony.com (Eric Weaver) writes:
|>
|> In article <1993Aug24.163838.27260@walter.cray.com>, rps@cray.com (Russell P. Starksen) writes:
|> |> It`s just like the federal Government, "You can't know something unless you
|> |> already know it".
|> |>
|> |> I find it interesting that you can't join MARS unless you have a radio
|> |> that can work 2 of their HF frequencies yet you can't modify your radio
|> |> to work these frequencies unless you have a MARS call sign. :-)
|>
|> Um, surely this is mistaken?
|>
|> A ham can do any doggone thing to his rig as long as he doesn't TRANSMIT
|> outside an authorized band.
|>
|> You can modify your radio to work those frequencies any time; you just can't
|> actually work them until you have the MARS call sign.

What Russell was referring to is that DEALERS (for the most part) will not provide the information needed to open up the transmit range without seeing a copy of your CAP or MARS license.

--
Ron Kirkpatrick
News Administrator/Postmaster
Tektronix, Inc
503-627-6707

489. Re: MARS frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 00:58:27 UTC
From: abracket@dg-webo.webo.dg.com
Message-ID: <1993Aug26.005827.15799@webo.dg.com>
Source record: 119705
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <25fjkjINNk6f@sweetpea.genrad.com> dls@genrad.com (Diana L. Carlson) writes:
>In article <1993Aug24.163838.27260@walter.cray.com> rps@cray.com (Russell P. Starksen) writes:
>>Here is a list of frequencies givin to me in a pamphlet sent by
>>the Airforce MARS chief.
>>
>>VHF - (148.125 mHz packet)
> ^^^^^^^
>Really? I wasn't aware that CAP shared this frequency with MARS. Is this
>really true? I do know that (per CAP National Boards two weeks ago) that this
>frequency will be taken away from CAP within two years....
>
>
>
>Diana
>
Realy, Why?? Do you know why the freq. "will be taken away from CAP"???

Thanks.

n1iqq
--73-al

Did I drop my .sig in the coffee???

490. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 04:53:46 UTC
From: aj@sage.cc.purdue.edu
Message-ID: <aj.746340826@sage.cc.purdue.edu>
Source record: 119706

I've got one, and I've used one of their mixers and three of their
MAR-series amplifiers. They were really good devices, and the book
showed me how to take advantage of them. Get one if you can.

Their home office is this:

Mini-Circuits
P.O. Box 350166
Brooklyn, NY
11235-0003

718/934-4500 voice
718/332-4661 fax

If you're in Europe;
44-252-835094 voice
44-252-837010 fax

My only connection with them is as a satisfied customer.

: John Dormer
: aj@sage.cc.purdue.edu

491. DDS article ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 13:05:11 UTC
From: dvarney@jabbah.gb.nrao.edu
Message-ID: <1993Aug26.130511.19952@nrao.edu>
Source record: 119707

Where was that DDS article using the Harris chip and the CA3338 published ?
Also, the date would be nice.

73s,
Doug -- WA1UVP
<dvarney@nrao.edu>

--

Sometimes it is better to have twenty million instrucitons by Friday than
twenty million instructions per second.

-- Wesley Clark

492. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 14:04:51 UTC
From: kthompso@donald.WichitaKS.NCR.COM
Message-ID: <106599@donald.WichitaKS.NCR.COM>
Source record: 119711

dbraun@ilx049.intel.com (Doug Braun) writes:

)The Mini-Circuits company plugs their "740 page RF-IF Designer's Handbook".
)It this a worthwhile addition to the homebrewer's bookshelf? Does
)anyone know the best way to get one from them, hopefully for free?

They give it away. It is just a catalog of their stuff.

--
Ken Thompson N0ITL Disk Array Hardware Development Peripheral Products MPD-Wichita NCR Corp. an AT&T company 3718 N. Rock Road Wichita,Ks 67226 (316) 636-8783
Ken.Thompson@wichitaks.ncr.com

493. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 14:31:28 UTC
From: richard@alaska.et.byu.edu
Message-ID: <00$@byu.edu>
Source record: 119708

I have tried getting some of the amplifiers, but their minimum order is ten. The minimum order for the other components is one. How did you work around this? I would like to order I think it was MAR-6 $1 or so, but I don't want to buy 10 just 2-3.

Richard Christensen

494. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 16:06:06 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <25in1e$6t@male.EBay.Sun.COM>
Source record: 119709

In article @byu.edu, richard@alaska.et.byu.edu (Richard B. Christensen) writes:
.>I have tried getting some of the amplifiers, but their minimum order
.>is ten. The minimum order for the other components is one. How did
.>you work around this? I would like to order I think it was MAR-6 $1
.>or so, but I don't want to buy 10 just 2-3.
.>
.>Richard Christensen

Look at the back cover of the Mini-Circuits Catalog. There is a list
of numerous local distributors. They usually have different sales policies than
the national distribution organization (the company store). The local offices
are usually pretty good about small orders and providing evaluation samples.
Good luck.

Ray Anderson WB6TPU
raymond.anderson@sun.com
rander@netcom.com

495. home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 17:06:17 UTC
From: porter@hopper.ACS.Virginia.EDU
Message-ID: <CCDM6I.F7w@murdoch.acc.Virginia.EDU>
Source record: 119710

In order to build my CW speed, I have been listening to 40m a lot.
Sometimes I have considerable difficulty when two stations are close
together, because my radio has a pretty wide band pass.

To solve this and other audio filtering problems, I have been considering
getting into DSP, because I am much better at hacking together software
than hardware. Hopefully, I can write my own DSP programs to do
different types of audio filtering. More than anything, I think it
will be a lot of fun.

Ideally, what I'd like to see is a plug-in card for a PC that has
A-to-D and D-to-A, plus whatever else your typical DSP setup has.
I'd like to be able to monkey around with my audio signal with home-made
software. It'd be cool to write your own automatic notch filter, maybe
a graphical interface where you can manipulate a real-time spectral
analysis to change the filtering on the fly. You know, click here
to cut off all frequencies below this point, put a notch filter here,
etc.

I am not interested in pre-packaged filters. I want to write my own
software.

- What type of DSP cards are available for the PC?
- How much do they cost?
- How programmable are they?
- What type of programming language/package do they use?
- Are there any that use the regular C compilers, like Borland?
- What type of goodies do DSP cards usually have on them?
- Would I be better off writing software for a Soundblaster?

Right now, I am just looking for a direction to get started. I'd
like to start with something that is relatively cheap, so if it
does not work, I have not blown a fortune. Any suggestions are
welcome!
73 de KD4DNU
--
Alan \\\/// work: (804) 978-5764 \\\ home: (804) 973-ALAN
Porter \XX/ alan.porter@cho.ge.com \\\ big@catt.ncsu.edu

--
Alan \\\/// work: (804) 978-5764 \\\ home: (804) 973-ALAN
Porter \XX/ alan.porter@cho.ge.com \\\ big@catt.ncsu.edu

496. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 20:08:34 UTC
From: ehare@arrl.org
Message-ID: <2133@arrl.org>
Source record: 119712

In rec.radio.amateur.homebrew, aj@sage.cc.purdue.edu (John Dormer) writes:

> I've got one, and I've used one of their mixers and three of their
>MAR-series amplifiers. They were really good devices, and the book
>showed me how to take advantage of them. Get one if you can.

The MAR series amps are MMICs, inexpensive, 50-ohm amplifiers good for
up to about a GHz. Now, if 10 years ago someone had told me that I
could buy a 20 dB amplifier with 10 milliwatts output that ranged from
DC to 1 GHz for about $2.00 I would have thought that person to be
nuts. :-).

An article appeared in February and March 1987 QST explaining the
MMIC nicely.

73 from ARRL HQ, Ed

Ed Hare, KA1CV ehare@arrl.org
American Radio Relay League
225 Main St.
Newington, CT 06111 "You will never put the puzzle together
(203) 666-1541 - voice if you keep putting all of the pieces
ARRL Laboratory Supervisor back in the box." Colleen
RFI, xmtr and rcvr testing
-----

497. OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 20:29:37 UTC
From: kirk@arrl.org
Message-ID: <2148@arrl.org>
Source record: 119638

Greetings!

I need several OCTAL plugs to use a power supply connectors on
a home-brew 6AG7/6146 CW rig that's nearing completion.

I have the "shells," but I need a few "plug bodies," to use a
computer buzzword (I think it's a computer buzzword???)

Anybody have any for sale or trade?

Thanks!

--Kirk, NT0Z

==
Kirk Kleinschmidt, NT0Z | Tel 203-666-1541 9-5 EST
QST Assistant Managing Editor | Fax 203-665-7531 24 hrs
ARRL HQ, 225 Main St, Newington, CT 06111 | BBS 203-666-0578 24 hrs
e-mail: kirk@arrl.org | GEnie K.KLEINSCHMI
==

498. Re: Mini-Circuits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 21:05:44 UTC
From: cbetz@radioman.cray.com
Message-ID: <1993Aug26.160544.24872@walter.cray.com>
Source record: 119714

In article <00$@byu.edu>, richard@alaska.et.byu.edu (Richard B. Christensen) writes:
> I have tried getting some of the amplifiers, but their minimum order
> is ten. The minimum order for the other components is one. How did
> you work around this? I would like to order I think it was MAR-6 $1
> or so, but I don't want to buy 10 just 2-3.
>
> Richard Christensen

Check with Down East Microwave and/or Microwave Components of Michigan. I
think they both handle the Mini Circuit MMICs and the Avantek equivalents.
Neither place has a minimum quantity requirement.

Charlie Betz, N0AKC

499. Re: home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 21:57:57 UTC
From: cpuig@infoserv.com
Message-ID: <930826.135757.9J2.rusnews.w165w@cpuig.infoserv.com>
Source record: 119713

porter@hopper.ACS.Virginia.EDU (Alan Porter) writes:

>
> Ideally, what I'd like to see is a plug-in card for a PC that has
> A-to-D and D-to-A, plus whatever else your typical DSP setup has.
> I'd like to be able to monkey around with my audio signal with home-made
>
> - What type of DSP cards are available for the PC?
> - How much do they cost?
> - How programmable are they?
> - What type of programming language/package do they use?
> - Are there any that use the regular C compilers, like Borland?
> - What type of goodies do DSP cards usually have on them?
> - Would I be better off writing software for a Soundblaster?
>
> Right now, I am just looking for a direction to get started. I'd
> like to start with something that is relatively cheap, so if it
> does not work, I have not blown a fortune. Any suggestions are
> welcome!
>

Your lowest cost option is probably the recently released TI evaluation board, which costs about $100. It is not a PC plug-in card, but communicates via a serial line (RS-232 cable). TI part no. is TMDS3200026. Available from TI distributors; try Marshall at 1-800-522-0084.

Sorry, for this price you will have to program in TMS320 assembler rather than C. The A/D and D/A interfaces are included with the board. It is fully programmable, but memory is limited.

PC plug in boards tend to be quite a bit more expensive: $600 and up. C compilers are not included in the basic price, but are extras.

In addition to the DSP board and assembler/compiler, you will need access to filter design software (Parks-McClellan algorithm, etc.). The best value in this respect is The Student Version Of MATLAB, available at many college bookstores for about $50 (Prentice-Hall ISBN 0-13-855974-0), in both Mac and PC versions.

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

500. Re: home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-26 23:34:15 UTC
From: perry@fc.hp.com
Message-ID: <CCE453.BzF@fc.hp.com>
Source record: 119717

```
: porter@hopper.ACS.Virginia.EDU (Alan Porter) writes:
: > Ideally, what I'd like to see is a plug-in card for a PC that has
: > A-to-D and D-to-A, plus whatever else your typical DSP setup has.
: > I'd like to be able to monkey around with my audio signal with home-made

How about using a SoundBlaster and programming the FFTs yourself?

Perry Scott
AA0ET
```

501. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 00:18:29 UTC
From: jeh@cmkrnl.com
Message-ID: <1993Aug26.171829.2600@cmkrnl.com>
Source record: 119716
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <25fvnj$1lp@tribune.usask.ca>, gps19@herald.usask.ca (Gregory P. Siemens) writes:
> Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
> : I'm getting ready to do some free-lance designing, and would like to start
> : a discussion...
>
> : What kind of kits would you like to see offered by companies like Ramsey
> : and others in the under-$40-per-kit class?
>
> : What kinds of construction projects would you like to see featured in
> : magazine articles?

Hmmmm. How about a set of computerized test equipment based on a PC bus ISA foundation module?

Here is a suggestion for the "style" of kit or article: Don't make it a black box. Teach the builder something, and try to make some provision for "hackability".

I read about the Ramsey 2-meter transceiver with the diode-programmed freq selector, with instructions on how to set it up, and I thought that was really nifty. Someone who knows something about digital circuits could take that and add on a keypad-driven selector, a scanner, lots of things.

This was one area where Heathkit was never very good. You got real good at soldering, but you didn't have much chance to learn anything about the circuit topology. And of course on their later kits (like the WWV clock) they were using things like microprocessors with on-board ROM; If you didn't like the way the thing was programmed, that was just too bad. It would be far more fun if that ROM was in a separate chip (with commented source code on a disk that comes with the kit) so that a user who wanted to could "hack" it a bit. Sure this might be a little more expensive, but it's closer to what kit building is supposed to be about (imho).

--- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

502. Re: SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 01:22:01 UTC
From: tomb@lsid.hp.com
Message-ID: <CCE94p.H6z@hpcvsnz.cv.hp.com>
Source record: 119715
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

Gary Coffman (gary@ke4zv.uucp) wrote:

: Now suppose the line is *not* terminated in a resistor of the line's
: characteristic impedance. Let's first look at two extreme cases. If
: the line is *open*, then current will be zero and voltage will be
: maximum, a very high impedance point. Note that the voltage and
: current are now out of phase by 90 degrees. When the voltage collapses,

Poppycock. The instantaneous net voltage and current on a line at any
point are the vector sum of the voltage and current of a forward and
a reverse travelling wave. For each of those two, the ratio of
voltage to current is the line impedance. If you do the measurement
at a single frequency, and if the line impedance is real (no reactive
component, purely resistive), the current and voltage will be
exactly in phase. If you could _truely_ open-circuit an end of the
line so there is _zero_ current there, then you can't say the voltage
and current are 90 degrees out of phase at that point, because the
current there is at all points in time _zero_. If there's a 90 degree
phase shift between voltage and current, it's because you have put a
purely reactive load at that point, not a true open circuit. Period.

==========

: Now this would all be pretty academic if we couldn't separate
: Vf and Vr so we could measure them. Various bridge type circuits
: can be used to separate the two wave components by taking advantage
: of non-reciprocal properties of the bridge circuit. We can also
: take advantage of the properties of travelling waves in the monimatch
: to do the same thing. It's difficult to show how to build a VSWR
: meter without drawings, so I'll refer you to the instrument on
: page 27-11 of The ARRL Antenna Book for a line section that will
: work at VHF/UHF and that can be made out of ordinary copper plumbing
: fixtures.

Gary earlier in the posting noted that an SWR bridge measures VSWR or
ISWR rather than SWR. I take some issue with this. I claim that
almost all bridges that are physically a small fraction of a wavelength
make their measurement by ratioing current and voltage at a point in
the line; a true VSWR meter would measure the RMS voltage at at least
two places on the line (separated, for example, by 1/4 wavelength in
the line), but this is NOT the way these meters work. Whether the
voltage is measured with a transformer, a capacitive divider, or a
resistive divider, it's the voltage at a _single_ point in the line.
And at that same point, the current is measured, with a current
transformer, the voltage drop through a resistor, or as an inductive

pickup that's also a capacitive pickup monitoring the voltage:
that is, the parallel wire.

A forward wave will have v/i=z, where i is measured as positive if flowing toward the load; a reverse wave will have v/i=z, where i is measured as positive is flowing away from the load. The SWR meter works by expecting v-iz=0 for i measured positive toward the load; built in to the meter is an assumption about z! The meter does NOT know the z of the line you are measuring, so if you use a 50 ohm meter on a 75 ohm matched line, it will tell you incorrectly that the line has an SWR greater than 1:1.

If you want more math details of how the meter works, I could be talked into providing them.

73, K7ITM

503. Re: home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 05:20:28 UTC
From: mfraser@vanbc.wimsey.com
Message-ID: <25k5is$ogo@vanbc.wimsey.com>
Source record: 119618

I just got my TI DSK board, and it's as advertized. Being a real newbie I do appreciate the fact theat they gave us the necessary book and a simple assembler and debugger.

What I would like from the world at large, is a little help with such things as a daughter board with more program RAM (or non-volatile something or other), and a bit more of atutorial on the assembly lang programming of the C26. The assembler, by the way, doesn't do calculations associated with many directives; you have to figure out the math yourself and enter the constants as values rather than as variables derived from other values....

Particularly interested in mapping (being such a newbie) between the "REAL" TI assemblers' directives and ruiles, and the simple one that came with the board.

By theway, anyone heard of a try to put W9GR version one filter s/w into the DSK? Seems like a natural....

Cheers
Mark Fraser

504. Re: home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 09:12:21 UTC
From: n4hy@tang.ccr-p.ida.org
Message-ID: <N4HY.93Aug27091221@tang.ccr-p.ida.org>
Source record: 119620

On Program/Data memory requirements for DSP:

I think I programmed all the modems in the AEA DSP1232/2232 and most of the early TAPR/AMSAT (Delanco-Spry) code. Please notice that I said MODEMS. You folks are talking about filters, noise cancellers, adaptive interference removers, etc. These are smaller than modems. NO MODEM THAT I HAVE PROGRAMMED NEEDED MORE THAN 512 WORDS OF PROGRAM MEMORY OR MORE THAN 700 WORDS OF DATA MEMORY. DSP programs are SMALL SMALL SMALL. You are not writing graphics library for pete's sake. The larger modems were the RTTY modems that needed <huge> filters to get better than `their filter' performance. A PSK modem, 9600 bps FSK modem, A VHF BEL-202 modem, 2400 bps VHF modem, etc. were all under 300 words of program memory and 512 words of data memory with the largest being the differentially encoded QPSK modem (2400 baud). You are not writing programs that have to have 100 K to talk to DOS or Windows!

Bob
--
Robert W. McGwier | n4hy@ccr-p.ida.org
Center for Communications Research | Interests: amateur radio, astronomy,golf
Princeton, N.J. 08520 | Asst Scoutmaster Troop 5700, Hightstown

505. Project 5: 15 meter QRP CW xmtr

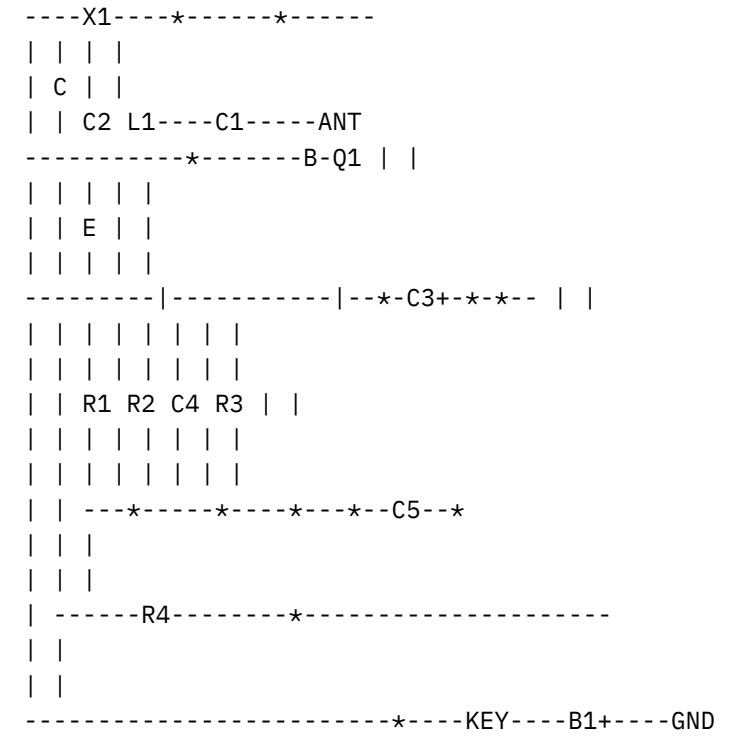
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 09:35:53 UTC
From: jherman@uhunix.uhcc.Hawaii.Edu
Message-ID: <CCEvzt.4np@news.Hawaii.Edu>
Source record: 119619

Here's a one transistor flea-power CW xmtr for 15 meters (I'll provide a 2 transistor 1 watt xmtr as the next project for those of you who want to run high power on 15M...)

To tune-up the xmtr, just peak C2 for maximum signal on your receiver's S meter.

Parts list:

Q1 2N373 transistor
C1,5 4700 pF capacitor
C2 3-30 pF trimmer
C3 30 mF
C4 1000 pF
R1 10K resistor
R2,3 510 ohm
R4 50K
B1 9 VDC battery
L1 17 turns B&W 3007, tapped 8 turns from C5 end
X1 21 mHz fundamental 3rd overtone crystal



Note the battery's polarity. Recall that * indicates a junction of 3 or more wires; there are 2 jumps - one from R4 and the other from R1.
Sorry, only straight keys can be used in this xmtr...

Credit goes to Bert Simon, W2UUN, and his book, 104 HAM RADIO PROJECTS.

Jeff NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@Hawaii.Edu

506. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 14:17:01 UTC
From: reid@ucs.indiana.edu
Message-ID: <reid.303.746461021@ucs.indiana.edu>
Source record: 119621
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
> : I'm getting ready to do some free-lance designing, and would like to
> : start a discussion...
>
> : What kind of kits would you like to see offered by companies like Ramsey
> : and others in the under-$40-per-kit class?
>
> : What kinds of construction projects would you like to see featured in
> : magazine articles?

A popcorn popper, very small, using microwaves or laser to pop a single
grain at a time, machine-gun fashion.

_
|_|=< * * * * * ()-:

--

Frank reid@ucs.indiana.edu

507. WANTED: Schematics and/or Alignment Procedures for Allied R-100A

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 14:26:00 UTC
From: melka@ast.dsd.northrop.com
Message-ID: <1062@ast.dsd.northrop.com>
Source record: 119624
Cross-posted to: rec.radio.shortwave,rec.radio.swap,rec.radio.amateur.misc,rec.radio.amateur.homebrew

After helping my sister clean out my mother's basement, I came across a remnant of my past, an old KnightKit R-100A Receiver. After cleaning it out, and wiping 20+ years of dust off it, it *SURPRISINGLY* still runs! Unfortunately, it is out of alignment and the manual for it is probably in the same place all my unmatched socks are. So, if anybody out there has a manual for a KnightKit R-100A circa 1968 and would be willing to copy the alignment procedures and/or the schematics, I'd be willing to pop for the copy fee and postage. I figure if the INTERNET doesn't have it, nobody does.

Thanks for the effort. Either repost or e-mail is fine.

---------------------------------------+---------------------------------------
John F. Melka | Trucks are the plaque in the arteries
Technical Advisor [Call pending FCC] | of transportation.
---------------------------------------+---------------------------------------
Any Opinions Expressed By The Speaker/Management, May Not Necessarily Be Those of the Management/Speaker.

508. Re: DDS article ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 14:43:02 UTC
From: mb@wpsun4.UUCP
Message-ID: <846@wpsun4.UUCP>
Source record: 119622

dvarney@jabbah.gb.nrao.edu (DOUGLAS VARNEY) writes:
: Where was that DDS article using the Harris chip and the CA3338 published ?
: Also, the date would be nice.

It was in the August issue of 73.

--Michael Bendio, WT7J
mb@titan.wordperfect.com

509. Project 99713.43: 40M QRP CW xmtr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 14:56:03 UTC
From: dfeldman@teal.csn.org
Message-ID: <CCFAtH.2C3@csn.org>
Source record: 119623

OK, I've had it!

Back in high skeul (circa 1972) I built (out of a hardcover book covering projects like this) a 40M CW transmitter containing:

50L6 tube
xxx ohm 10 watt wire wound resistor (dropped 117VAC to 50VAC filament)
A couple of 0.01 uF ceramic discs
A cathode-bias and grid-leak resistor
A 7143 kHz FT-243 packaged xtal
A 2.5 mH RF choke
A single silicon diode
A 50 uF 150VDC electrolytic cap
A couple of air-variable caps & a home-wound coil (pi-net)

The thing put out about 4Watts and I keyed it with a straight key.

It chirped like mad.

My RX was an ARC-5 covering 6-9 MHz or so, and powered by a small filament transformer (for the filaments) and another silicon diode and electrolytic cap (and maybe a transformer, I don't remember) for the B+.

Both were tied *in parallel* at the antenna to my 70 ft wire out the bedroom window. No T-R switch; the headphones were simply taken off while transmitting (I'm sure most of the power went into the receiver's static-drain-off NE-2 light).

BTW, this was my first rig and the *total* out-of-pocket cost was about $5 for *everything* in my shack.

73 Dave WB0GAZ

510. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 19:44:20 UTC
From: alanb@sr.hp.com
Message-ID: <CCFo5x.B50@srgenprp.sr.hp.com>
Source record: 119625
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
: What kind of kits would you like to see...?

How about a 5 MHz synthesized VFO? There are a number of transceivers that use this range and have provision for an external VFO. And it's a useful frequency range for home construction projects. (e.g. a 9 MHz IF gives you 80 and 20 meters with no further heterodyning.)

Tuning range should be around 4.9-5.6 MHz with 10 Hz or smaller steps. A really nice feature would be a digital readout with selectible offset so it would display actual operating frequency.

AL N1AL

511. Re: SWR Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-27 20:31:18 UTC
From: tomb@lsid.hp.com
Message-ID: <CCFqC7.82q@hpcvsnz.cv.hp.com>
Source record: 119626
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

Tom Bruhns (tomb@lsid.hp.com) (That's me) wrote:
: Gary Coffman (gary@ke4zv.uucp) wrote:

(a couple paragraphs from my earlier posting deleted...)

: : Now this would all be pretty academic if we couldn't separate
: : Vf and Vr so we could measure them. Various bridge type circuits
: : can be used to separate the two wave components by taking advantage
: : of non-reciprocal properties of the bridge circuit. We can also
: : take advantage of the properties of travelling waves in the monimatch
: : to do the same thing. It's difficult to show how to build a VSWR
: : meter without drawings, so I'll refer you to the instrument on
: : page 27-11 of The ARRL Antenna Book for a line section that will
: : work at VHF/UHF and that can be made out of ordinary copper plumbing
: : fixtures.

: Gary earlier in the posting noted that an SWR bridge measures VSWR or
: ISWR rather than SWR. I take some issue with this. I claim that
: almost all bridges that are physically a small fraction of a wavelength
: make their measurement by ratioing current and voltage at a point in
: the line; a true VSWR meter would measure the RMS voltage at at least
: two places on the line (separated, for example, by 1/4 wavelength in
: the line), but this is NOT the way these meters work. Whether the
: voltage is measured with a transformer, a capacitive divider, or a
: resistive divider, it's the voltage at a _single_ point in the line.
: And at that same point, the current is measured, with a current
: transformer, the voltage drop through a resistor, or as an inductive
: pickup that's also a capacitive pickup monitoring the voltage:
: that is, the parallel wire.

: A forward wave will have v/i=z, where i is measured as positive if
: flowing toward the load; a reverse wave will have v/i=z, where i is
: measured as positive is flowing away from the load. The SWR meter
: works by expecting v-iz=0 for i measured positive toward the load;
: built in to the meter is an assumption about z! The meter does NOT
: know the z of the line you are measuring, so if you use a 50 ohm
: meter on a 75 ohm matched line, it will tell you incorrectly that
: the line has an SWR greater than 1:1.

NOTE that a true VSWR meter, one that works by actually measuring the
RMS voltage at some distinct points along the line and NOT measuring the
current at all, will get the right SWR answer independent of line
impedance (assuming it's designed properly...). That is, if you
really measure the SWR as (Vrms.max / Vrms.min), where the max and
min are found by "sliding a voltmeter along the line" as it were,

then the measurement is independent of line impedance. However, this is !!_NOT_!! the way any of the common SWR bridges work.

: 73, K7ITM

512. Re: home-brewed DSP code... suggestions?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-28 07:09:29 UTC
From: cpuig@infoserv.com
Message-ID: <930827.230929.5V1.rusnews.w165w@cpuig.infoserv.com>
Source record: 119627

mfraser@vanbc.wimsey.com (Mark Fraser) writes:

> I just got my TI DSK board, and it's as advertized. Being a real newbie
> I do appreciate the fact theat they gave us the necessary book and a
> simple assembler and debugger.

Would you post a summary of its hardware & software features for
us? Also, info on how to order it, etc.? What book(s) are included?

> What I would like from the world at large, is a little help with such
> things as a daughter board with more program RAM (or non-volatile
> something or other), and a bit more of atutorial on the assembly
> lang programming of the C26. The assembler, by the way, doesn't do

The 1.5K internal RAM on the C26 is more than enough for some
very sophisticated DSP work. It may be a while before you can cook
up something that won't fit, unless you are interested in doing
long FFTs.

> calculations associated with many directives; you have to figure
> out the math yourself and enter the constants as values rather than
> as variables derived from other values....
>
> Particularly interested in mapping (being such a newbie) between the
> "REAL" TI assemblers' directives and ruiles, and the simple one
> that came with the board.

Here is a list of resources on the C26.

1. TMS320C2x User's Guide. TI Pub. SPRU014B.

Especially Chapters 4 and 5.

2. Digital Signal Processing Applications With The TMS320 Family:
Theory, Algorithms, and Implementations. 3 volumes.
TI Pub. SPRA012A, SPRA016, and SPRA017, respectively.

Of these, vol. 1 and 2 are the most valuable, since vol. 3 is
mostly about the C3x family.

3. TI DSP BBS at 1-713-274-2323.

The BBS has a fair amount of source code. Also, you used to
be able to order TI technical pubs. (such as the above) by
leaving a mail message. Otherwise, TI has a national
800 customer support number that will take document orders
if you give them the SPR numbers. The 800 line is not
always effective at locating documents by title.

4. TASM: A Table Driven Cross Assembler for the MSDOS Environment
(not to be confused with Borland's TASM native MSDOS assembler).

Shareware from:

Thomas N. Anderson
Speech Technology Inc.
837 Front Street South
Issaquah, WA 98072

This used to be available on Compuserve.

This is a very nice -- and quite powerful -- cross-assembler that
covers a wide variety of processors, including the C2x family. I
found only one (easily fixed) error in the coding of the CONF
instruction for the C26. It does allow assembly time expressions
using C syntax and operators (but no operator precedence, so you
have to use parentheses). Includes a useful preprocessor (like
C, but simplified). However, its syntax is not the same as TIs
although the assembler mnemonics are. So, you'll need to do a
little translation.

I do not know whether you can use this cross-assembler directly
with the TI board.

5. Jon Bloom. "Measuring SINAD Using DSP." QEX. June 1993.

Includes a C25 program listing. Bloom (jbloom@arrl.org) is the
current editor of QEX.

6. Carlos Puig (that's me). "A Weaver Method SSB Modulator Using
DSP." QEX. September 1993 (forthcoming).

The DSP portion was implemented on a homebrewed C26 development
board using the abovementioned TASM cross-assembler. The ARRL
will be distributing the source code electronically.

You may also need some DSP filter design software. Alternatives include
some FORTRAN programs (source code) on the TI BBS (P6 is the Parks-McClellan
algorithm), PC-DSP (book and software), or the Student Version of MATLAB
(book and software). With any of these inexpensive programs, you will need
to write your own utility to convert the design coefficients (floating point)
to their fixed point equivalents.

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

513. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-28 15:17:41 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-746551053@unomaha.edu>
Source record: 119628
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.
Due to the recent reorganization, it is also on a temporarily-
accelerated posting schedule as follows:

July weekly
August bi-weekly
September back to monthly)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
```

arrangement, but one was that the system was not supposed to be used for commercial purposes. Since one of hams' favorite pastimes is swapping gear, it was natural for hams to post messages about equipment for sale to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use restriction, and after some argument, a group was created specifically for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
===========================

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

514. Various DDS articles

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-28 21:20:36 UTC
From: jjw@seastar.org
Message-ID: <CCHnAD.9I@seastar.org>
Source record: 119629

As it seems to be becoming a FAQ, I thought it would be a Good Idea to get a list of various DDS articles. There was one in August 1993 of 73 magazine using a Harris NCO and DAC, and another in 73 magazine in December 1992 and January 1993 using a Qualcom NCO and Harris DAC. There was also one a few years back (memory fails me) using TTL chips to make the NCO, good to 524KHz in Radio Electronics, and one around 1984 in QST that I've heard of. Anybody with more info on these, or other article, please send it to me. I'll try to get issue of magazine, frequency range covered and other such info together and forward it for the FAQ list.

Aside note: anybody out there build the TW1 from December 92 issue of 73 magazine, and interested in new developments for it? Drop me a note, I've got another article pending 73 approval for a thumbwheel switch controller for it, and various other add-ons (receiver, up-mixer, preselector filter, microcontroller, better amp) in various stages of dis-array... er, construction. There's also another TW1 article soon to run (not one of mine, I'm pleased tro note!) for control via a parallel port. Anybody up to controlling a PLL from it, giving VHF coverage??? Anybody with spread-spectrum ideas for it? (I've got one, but still have a synching problem to work out.)
73 de n9jzw -->jjw
--

John Welch, N9JZW

515. QEX?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-29 04:13:00 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Aug29.041300.14718@mksol.dseg.ti.com>
Source record: 119630

I've seen references to a mag called QEX. Whats it about?
I'm always looking for new mags to pile onto my shelves
unread for years and years.
Art. =)

516. Re: QEX?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-29 16:54:52 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <25qn0s$rsb@hobbes.cc.uga.edu>
Source record: 119631

In article <1993Aug29.041300.14718@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:
>I've seen references to a mag called QEX. Whats it about?
>I'm always looking for new mags to pile onto my shelves
>unread for years and years.

It is an "experimenter's journal" published by the ARRL, containing material that is too technical for QST :)

Personally, I like QEX. Amateur radio without contest scores!
--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

517. Re: QEX?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-29 20:07:34 UTC
From: cpuig@infoserv.com
Message-ID: <930829.120734.4C5.rusnews.w165w@cpuig.infoserv.com>
Source record: 119632

blair@mksol.dseg.ti.com (arthur blair) writes:

> I've seen references to a mag called QEX. Whats it about?
> I'm always looking for new mags to pile onto my shelves
> unread for years and years.
> Art. =)

"QEX: ARRL Experimenter's Exchange" is published monthly by the ARRL.
Format: 8.5" x 11", about 20-30 pages (and soon to grow, I understand).
Content: Purely technical articles related to ham radio and communications.

From the masthead:

Purposes of QEX:

1) provide a medium for the exchange of ideas and information between
Amateur Radio experimenters.
2) document advanced technical work in the Amateur Radio field.
3) support efforts to advance the state of the Amateur Radio art.

...

Both theoretical and practical technical articles are welcomed.

I highly recommend it if your interests are tehcnical.

Cost: $12/yr for ARRL members; $24/yr for nonmembers in the US. Higher
in other countries.

Editor: Jon Bloom (jbloom@arrl.org).

Write: ARRL
225 Main St.
Newington, CT 06111

Email: qex@arrl.org

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

518. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-30 13:37:38 UTC
From: jfw@ksr.com
Message-ID: <31345@ksr.com>
Source record: 119634
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

jeh@cmkrnl.com writes:
>Here is a suggestion for the "style" of kit or article: Don't make it a black
>box. Teach the builder something, and try to make some provision for
>"hackability".
>This was one area where Heathkit was never very good. You got real good at
>soldering, but you didn't have much chance to learn anything about the circuit
>topology. And of course on their later kits (like the WWV clock) they were
>using things like microprocessors with on-board ROM; If you didn't like the
>way the thing was programmed, that was just too bad.

Well, actually, the H29 terminal actually had available (as an option) a
printed listing of the ROM code. Of course, that made it somewhat difficult
to use (and, unsurprisingly, I never got around to actually programming a new
ROM), but at least it was available (two revisions out of date, though). I
also inherited a Heathkit X-10 interface kit, whose EPROM-microprocessor
had either self-erased or never been programmed; that one didn't have the
code available, but writing the code wouldn't have been hard and would have
been educational (except that a cursory glance at the circuit diagram
onvinced me that their design was a piece of junk...).

519. How to match caps, inductors?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-30 16:33:24 UTC
From: mb@wpsun4.UUCP
Message-ID: <847@wpsun4.UUCP>
Source record: 119636

I'm building Rick Campbell's R2 phasing SSB receiver which appeared earlier this year in QST. The I and Q channels require matched inductors and capacitors. I expect to encounter this kind of requirement in future projects too. What's the best approach? Buy an LC meter or bridge? Throw together a simple oscillator that I can hear on my HF rig and match by frequency of oscillation? Any ideas or suggestions would be very welcome.

--Michael Bendio, WT7J
mb@titan.wordperfect.com

520. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-30 17:46:00 UTC
From: ard@siva.bris.ac.uk
Message-ID: <30AUG199318465973@siva.bris.ac.uk>
Source record: 119635
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Aug26.171829.2600@cmkrnl.com>, jeh@cmkrnl.com writes...
>In article <25fvnj$1lp@tribune.usask.ca>, gps19@herald.usask.ca (Gregory P. Siemens)
writes:
>> Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
>> : I'm getting ready to do some free-lance designing, and would like to start
>> : a discussion...
>>
>> : What kind of kits would you like to see offered by companies like Ramsey
>> : and others in the under-$40-per-kit class?
>>
>> : What kinds of construction projects would you like to see featured in
>> : magazine articles?
>
>Hmmmm. How about a set of computerized test equipment based on a PC bus ISA
>foundation module?
>
>Here is a suggestion for the "style" of kit or article: Don't make it a black
>box. Teach the builder something, and try to make some provision for
>"hackability".
>
>I read about the Ramsey 2-meter transceiver with the diode-programmed freq
>selector, with instructions on how to set it up, and I thought that was really
>nifty. Someone who knows something about digital circuits could take that and
>add on a keypad-driven selector, a scanner, lots of things.
>
>This was one area where Heathkit was never very good. You got real good at
>soldering, but you didn't have much chance to learn anything about the circuit
>topology. And of course on their later kits (like the WWV clock) they were
>using things like microprocessors with on-board ROM; If you didn't like the way
>the thing was programmed, that was just too bad. It would be far more fun if
>that ROM was in a separate chip (with commented source code on a disk that
>comes with the kit) so that a user who wanted to could "hack" it a bit. Sure
>this might be a little more expensive, but it's closer to what kit building is
>supposed to be about (imho).

I've had this dream for quite a long time of producing a series of kits (not
really decided on what, but computers built from TTL possibly, or high-end
modular TV sets (with I2C bus available externally, etc)). I would also want to
make available the source code to the ROMs, PALs, etc, probably not in the kit
(there are just too many disk formats), but I would attempt to make available a
disk in any reasonable format to anyone who has purchased the kit. Or, put them
on a BBS.
It's a dream, and I'll probably never do it, but if someone else wants to, go

ahead....

Elektor are starting to publish articles where you buy a binary object file on disk for your PC to control it. I won't do that. I often modify the kits that I buy, and to have an essentially undocumented component makes that difficult. One reason I build things is the ability to make modifications to suit my application - to customise the project

>
> --- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
>Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

-tony

521. 1/4 shaft extensions/couplings

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-30 19:04:52 UTC
From: lakeith@wrdis01.robins.af.MIL
Message-ID: <9308301904.AA10318@wrdis01.robins.af.mil>
Source record: 119637

Does anyone know of a source for 1/4 shaft extensions and shaft
couplings??

I need a few of these for an antenna tuner project.

73,

Larry KQ4BY

522. Re: OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 05:16:15 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCCLyn4.L7A@netcom.com>
Source record: 119639

In article <2148@arrl.org> kirk@arrl.org (Kirk Kleinschmidt, NT0Z) writes:
>I need several OCTAL plugs to use a power supply connectors on
>a home-brew 6AG7/6146 CW rig that's nearing completion.
>
>I have the "shells," but I need a few "plug bodies," to use a
>computer buzzword (I think it's a computer buzzword???)
>
If you mean the males, you may be able to salvage a few from dead octal
tubes.

523. Re: 1/4 shaft extensions/couplings

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 11:58:37 UTC
From: wvanhorn@magnus.acs.ohio-state.edu
Message-ID: <25vedd$88p@charm.magnus.acs.ohio-state.edu>
Source record: 119640

In article <9308301904.AA10318@wrdis01.robins.af.mil> lakeith@wrdis01.robins.af.MIL (CONTRACTOR Larry Keith;WR-ALC/653 CCSG/SCDD) writes:
>Does anyone know of a source for 1/4 shaft extensions and shaft
>couplings??
>
>I need a few of these for an antenna tuner project.
>
>
>73,
>
>Larry KQ4BY

Larry:

Herbach and Rademan, P.O. Box 122, Bristol, PA 19007-0122 offers shaft couplers, adaptors, and extenders in their catalog (p. 73 of the current one). I believe they send the catalogs free for the asking, but you might check on that by phone. Their number is (800)848-8001.

The shaft fittings seem a bit pricey in view of the fact that a simple shaft extender costs $4.50 and for the same price you can get a 10:1 ratio drive with identical fittings (see p. 58).:-)

For simple shaft couplings, you might make your own with rubber or plastic tubing. They have the added advantage of being flexible, so precise alignment is not a problem.

73, Van - W8UOF
wvanhorn@magnus.acs.ohio-state.edu

524. Re: OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 13:34:43 UTC
From: jfw@ksr.com
Message-ID: <31406@ksr.com>
Source record: 119641

wa2ise@netcom.com (Robert Casey) writes:
>In article <2148@arrl.org> kirk@arrl.org (Kirk Kleinschmidt, NT0Z) writes:
>>I need several OCTAL plugs to use a power supply connectors on
>>a home-brew 6AG7/6146 CW rig that's nearing completion.
>>I have the "shells," but I need a few "plug bodies," to use a
>>computer buzzword (I think it's a computer buzzword???)
>If you mean the males, you may be able to salvage a few from dead octal
>tubes.

One can still buy these new as "relay plugs". I got a few about a year ago,
I think from Hosfelt Electronics (unfortunately, both my catalogs and my
junkbox are still packed away after moving).

525. OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 14:01:27 UTC
From: jangus@skyld.tele.com
Message-ID: <746805687snx@skyld.tele.com>
Source record: 119644

In article <2148@arrl.org> kirk@arrl.org writes:

> I need several OCTAL plugs to use a power supply connectors on
> a home-brew 6AG7/6146 CW rig that's nearing completion.

Newark Electronics 1 (203) 289-1416 East Hartford CT.

They stock a full series of the "old standard" tube base plugs.
4, 5, 6, 8 and 11 contacts in a "standard" shell. Also they have
three styles of plug-caps to cover the backs.

This is WPI, Section 8 page 608 of Catalog #112
Mating sockets are on the previous page.

There are about hundred or so distributor offices, so I'm not
going to list all of them. And no, I didn't see an 800 number.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

526. Microphone connectors needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 14:05:07 UTC
From: jangus@skyld.tele.com
Message-ID: <746805907snx@skyld.tele.com>
Source record: 119645

Radio Shack has dropped the 8-pin male chassis microphone connector from its product line. Apparently too many people have been bashing the shack rather than supporting some of thier product line. Some electronics stores have them in stock packaged by Philco, but at twice the price originally of R/S. Same quality. They had a good part there. I'm looking for a mail order source that I can accquire several of them from.

For a variety of reasons, I rather not pay $4 each for them at henry Radio.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

527. Where can I find BAYCOM design?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 16:40:13 UTC
From: dq528@cleveland.Freenet.Edu
Message-ID: <25vutd$aip@usenet.INS.CWRU.Edu>
Source record: 119643

I've heard the BAYCOM packet modem design refered to many times but have never actually seen it. Can anyone refer me to a magazine article or book. I've been told that the design has been posted to the net. Could anyone e-mail me one of those postings?

Another design I'd like to get information on is the "micropower TNC-2". Is this a public domain design? Has it ever been written up in a publication? Where can I find it?

I am looking for example RF MODEM circuits using the TI TCM3105. Any help would be much appreciated.

Bret (with no FTP access)
--
Bret Berger KB7EGU	dq528@cleveland.freenet.edu
	(216) 467-0965 (216) 467-3580 - FAX
Engineer	6527 Deerfield Drive, Suite 303
StoneFly Technology	Sagamore Hills, OH 44067-3108

528. synchronous detector (July QST)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 16:40:40 UTC
From: zelle@cs.utexas.edu
Message-ID: <m86vo8INNnj0@deimos.cs.utexas.edu>
Source record: 119642
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

This is a repost of a sci.electronics question to which I
have not gotten any responses. Perhaps some of you homebrewers can
help me out.

I am building a (relatively) inexpensive high-quality shortwave
receiver (primarily) for international broadcast-band listening. My
current prototype uses simple diode envelope detection, and I would
like to replace this with a synchronous detector. I have looked at a
number of articles on synch detectors and particularly liked the one
in the July QST which uses a couple of NE602's and an NE604. I'd like
to try this out, but I have a couple of questions.

First, I am confused about the center frequency of the VCO (BFO) as
presented in the article. By my caculations, the center frequency
appears to be around 380 Khz rather than 455 Khz. Is there a mistake,
or am I missing something? Even ignoring the approximate shunt
capacitance of the tuning diodes, the oscillator circuit seems tuned
too low.

Second, my design uses an IF frequency of 9.83 MHz. I would rather
not add a second conversion to a lower IF as extra band coverage will
(eventually) be provided by converters, and I'm afraid I'll be taking
a fidelity hit with a triple-conversion design. Will this design work
at the 9.83 IF? I know the '604 is spec'ed up to 20 Mhz and the '602
should work up to 200 Mhz, so these don't seem to present a problem.
My concern is how much trouble I will have twiddling the PLL loop
constant to get the locking range/rate right. I have no experience
designing PLLs, and I'm worried it could be a bit tricky. I would be
interested in hearing from anyone who has attempted synchronous
detection at higher IF frequencies.

Finally, I would be interested in opinions on how important it is to allow
a tunable BFO for listening to AM signals. I realize that this feature is
required to allow listening to a single side-band, but how often is that
really useful? I am mainly interested in using the synch detector to reduce
distortion from selective fading. I anticipate that most listening will be
with the carrier centered in the IF filter for DSB detection. What do others
think?

Has anybody out there built this or other synch detectors? We've all heard
the virute of these critters; let's hear about your experiences actually
getting one to work!

Thanks.

-- John Zelle
University of Texas-Austin
Computer Sciences

529. Re: OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 17:38:46 UTC
From: markz@ssc.com
Message-ID: <1993Aug31.173846.24201@ssc.com>
Source record: 119649

Kirk Kleinschmidt, NT0Z (kirk@arrl.org) wrote:
: Greetings!
:
: I need several OCTAL plugs to use a power supply connectors on
: a home-brew 6AG7/6146 CW rig that's nearing completion.
:
: I have the "shells," but I need a few "plug bodies," to use a
: computer buzzword (I think it's a computer buzzword???)

Check with a relay supplier. A lot of plug in relays use
the octal base, and you can get empty relay cases for building
custom modules.

Mark Zenier markz@ssc.wa.com markz@ssc.com

530. Grid Dip Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 20:18:53 UTC
From: nat@thorn.kpc.com
Message-ID: <1993Aug31.201853.3974@kpc.com>
Source record: 119646

Hello,
Could anybody send me pointers to articles on homebrewing a grid
dip oscillator. Alternately could someone send me circuit that I could
build. I am primarily interested in the HF bands.
Thanks in advance.
Nat.

--
Natarajan Gurumoorthy AB6SJ Kubota Pacific Computer, Inc.
nat@kpc.com 2630 Walsh Avenue
Phone 408 987 3341 Santa Clara, California 95051.

531. Re: Grid Dip Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 21:23:10 UTC
From: jfw@ksr.com
Message-ID: <31462@ksr.com>
Source record: 119647

nat@thorn.kpc.com (Natarajan Gurumoorthy) writes:
> Could anybody send me pointers to articles on homebrewing a grid
>dip oscillator. Alternately could someone send me circuit that I could
>build. I am primarily interested in the HF bands.

The ARRL Radio Amateur's Handbook usually has one; I only have the 1984
version in my office, but it certainly does.

John, WB7EEL

532. Re: Grid Dip Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-08-31 22:11:37 UTC
From: geertj@ica.philips.nl
Message-ID: <1993Aug31.221137.23088@ica.philips.nl>
Source record: 119648

nat@thorn.kpc.com (Natarajan Gurumoorthy) writes:

> Could anybody send me pointers to articles on homebrewing a grid
>dip oscillator. Alternately could someone send me circuit that I could
>build. I am primarily interested in the HF bands.

There are several. I was surprized not to find one in the ARRL handbook (hint),
but 'amateur radio techniques' has several.

However, the schematics isn't the most important thing; the construction is.
Because you're building a wide-range oscillator, pay special attention to
the wiring, which should be very short to non-existing. Milimeters
really do count here. Even if your device is meant for HF-only, there is
a good chance that the device might oscillate on VHF or anywhere else.
This causes false dips and other nastyness.

Also, pay attention to the decoupling, which should be wideband too,
for the same reasons.
A griddipper with removable coils is almost always a HF device; I never
saw one that worked right at, say, 400 MHz and still had removable
coils.

IMHO, the best way to build one is to fiddle around with the place
of the variable capacitor and the coil connector to make the wires short,
then build the oscillator 'floating' in this construction using extreme
short wires. Stray capacity will be minimal then.

Hope this helps,

Geert Jan PE1HZG

533. Frequency Forum

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 02:37:00 UTC
From: Jack.Anderson@f239.n109.z1.fidonet.org
Message-ID: <746867642.AA00994@blkcat.UUCP>
Source record: 119650

```
The Frequency Forum Bulletin Board System in Vienna, VA now carries
this UseNet newsgroup.

Jack Anderson, Sysop

Internet: janderson@ram.net
(alternate) jack.anderson@f239.n109.z1.fidonet.org

-*-SCANNER BBS for VA, MD, DC!-*-
-*-The Frequency Forum-*-(703) 207-9622-*-9600/V.32/MNP-*-
-*-Files, Frequencies and Discussion for Scanner Hobbyists/Radio Amateurs-*
***
* SLMR 2.1a *
```

534. Re: synchronous detector (July QST)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 12:31:29 UTC
From: porban@eeserv.ee.umanitoba.ca
Message-ID: <CCoDGI.rz@ccu.umanitoba.ca>
Source record: 119651

In article <m86vo8INNnj0@deimos.cs.utexas.edu> zelle@cs.utexas.edu (John Marvin Zelle) writes:
>
>This is a repost of a sci.electronics question to which I
>have not gotten any responses. Perhaps some of you homebrewers can
>help me out.
>
>I am building a (relatively) inexpensive high-quality shortwave
>receiver (primarily) for international broadcast-band listening. My
>current prototype uses simple diode envelope detection, and I would
>like to replace this with a synchronous detector. I have looked at a
>number of articles on synch detectors and particularly liked the one
>in the July QST which uses a couple of NE602's and an NE604. I'd like
>to try this out, but I have a couple of questions.
>
...
>
>Second, my design uses an IF frequency of 9.83 MHz. I would rather
>not add a second conversion to a lower IF as extra band coverage will
>(eventually) be provided by converters, and I'm afraid I'll be taking
>a fidelity hit with a triple-conversion design. Will this design work
>at the 9.83 IF? I know the '604 is spec'ed up to 20 Mhz and the '602
>should work up to 200 Mhz, so these don't seem to present a problem.
>My concern is how much trouble I will have twiddling the PLL loop
>constant to get the locking range/rate right. I have no experience
>designing PLLs, and I'm worried it could be a bit tricky. I would be
>interested in hearing from anyone who has attempted synchronous
>detection at higher IF frequencies.
>
>
>Has anybody out there built this or other synch detectors? We've all heard
>the virute of these critters; let's hear about your experiences actually
>getting one to work!
>
>Thanks.
>
>-- John Zelle
> University of Texas-Austin
> Computer Sciences
>
>
Hi John,

I have played some time ago with a synch detector. I have built one for an old Sony 2001 radio, the first one with the PLL tuning. That radio is also dual conversion, the first IF is about 83MHz, the second 10.7Mhz. The VCO frequency had to be 10.7MHz. I have used the Signetics NE561 PLL chip, it has everything on it for a synch detector. That method of synch detection does not use method employed by the Sony 2010 (i.e. phase shifting USB or LSB and then mixing it) but locks a VCO to the carrier and feeds that and the received signal to a double balanced mixer. The 561 chip is good to 30MHz, and all the capacities were in the 10 to 30 pF range. That made it very sensitive to stray capacities. I was thinking about making a third conversion down to 455KHz IF, and doing the synch detection there. The performance was not what I was expecting, it was not better than the radio's own envilope detector, but I never really finished that project. As for PLL design, there is an excellent book on it by R.E. Best: PLLs, Theory, Design and Applications.

Have fun, Peter

--

Peter Orban
internet:orban@nrcamt.ime.nrc.ca

535. Re: Grid Dip Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 16:25:47 UTC
From: jfw@ksr.com
Message-ID: <31516@ksr.com>
Source record: 119652

geertj@ica.philips.nl (Geert Jan de Groot) writes:
>nat@thorn.kpc.com (Natarajan Gurumoorthy) writes:
>> Could anybody send me pointers to articles on homebrewing a grid
>>dip oscillator.
>There are several. I was surprized not to find one in the ARRL handbook,
>but 'amateur radio techniques' has several.

Which edition? The 1984 edition has one (two, actually).

>A griddipper with removable coils is almost always a HF device; I never
>saw one that worked right at, say, 400 MHz and still had removable coils.

The 1984 Handbook has a circuit called the "Slipper Dipper" which is a VHF
grid, er, base dipper. I don't know if it appears in later editions, though.

536. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 17:00:10 UTC
From: jmhill@duck.WPI.EDU
Message-ID: <262keq$ncu@bigboote.WPI.EDU>
Source record: 119653
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Here is a project that I'd like to see, first a lead in introduction;

I read in a journal or two, fairly recently, reports of several companies that are planning to discontinue the manufacture and sales of discrete logic TTL chips. One article pointed out that such TTL logic chips are often used as, "glue" logic, which used to be implemented in dicrete chips. Such, "glue" logic today is often implemented in some form of logic gate array or other scheme. Gate arrays allows the functionality of many TTL chips to be programmed into a single chip.

If you look inside one of the early PCs, you will notice MASSES of TTL chips. A newer PC will have much fewer chips. Most of the TTL chips are replaced by a few gate array chips or application specific chips.

Gate arrays are a natural next step in logic integration, one form is the field programmable gate array(FPGA). Such a device, I would suppose, would be programmed like an EPROM. Thus using PC software, a design is developed, then programmed into the gate array. A single gate array can replace many different TTL devices wired in a myriad of ways. Just think what this does to inventory!

So down to the projects; First of all, a simple FPGA programmer that would allow designs to be downloaded from a PC, or copied. Second, a software package to allow design development.

Jonathan/KA1WZN
jmhill@ee.wpi.edu

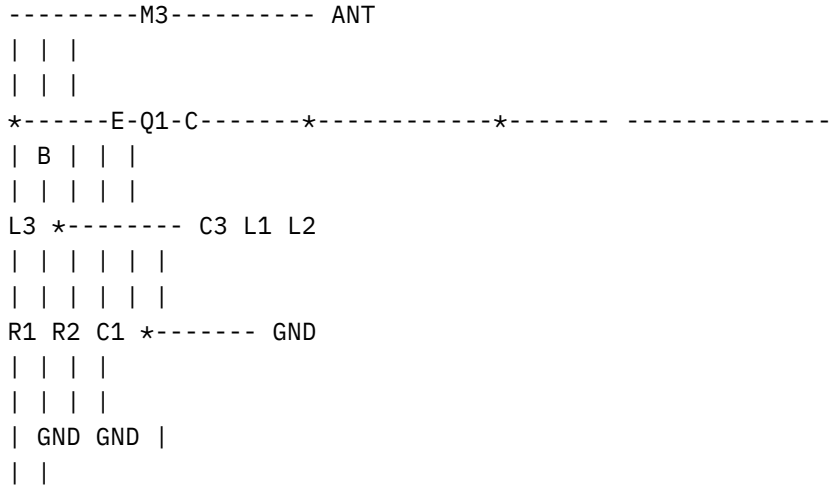
537. Project 6: 80M QRP `colorburst' CW xmtr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 20:06:10 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CCoyIA.84K@news.Hawaii.Edu>
Source record: 119654

Gang,
In preparation for tomorrow's 80M QRP Colorburst Contest, here's a quick 80M xmtr you can throw together in 5 minutes; the 3579 kHz xtal comes, naturally, from the colorburst oscillator board in your color TV (if you've got a junked TV, or if you think TV only contains junk, yank the xtal out). The rf output is not much - about 25 mw. Tuneup is simple: just bring a field strength meter into vicinity of L1/L2 and tune L1 for peak deflection of the meter. If you really want to get fancy, you can substitute a 100 pF variable for C3 and optimize a bit further; this involves a bit of experimentation to determine a `norm' setting for L1/L2. After this has been established, all further tuning can be accomplished with C3.

Parts List:

C1 .047 mF capacitor
C2 .0015 mF
C3 100 pF
L1 18 turns of No.30 wire closewound on 3/8 in. diameter slug-tuned form
L2 5 turns of No. 30 closewound around middle of L1. Experiment with position of this coil over L1; in some circuits performance will be increased by moving L2 towards cold end of L1. Once exact position has been determined (with ant. hooked in and FSM for monitoring), glue in place.
L3 2.5 mH rf choke (National R-100 or equiv.)
M1 3 volt battery
M2 6 volt battery
M3 80 meter xtal
Q1 HEP-2 transistor
R1 330 ohm resistor
R2 27K resistor
S1 spst switch



```
| *----------KEY------M2+----GND
----------S1---M1+---GND |
|
C2
|
|
GND
```

Note the polarity of M1 and M2. Hope to hear some of you on the `official colorburst frequency' of 3579 kHz!

Jeff NH6IL

Jeffrey Herman, University of Hawaii Mathematics, jherman@Hawaii.Edu

538. Need a Packet Computer?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 20:34:47 UTC
From: donh@hpcuhe.cup.hp.com
Message-ID: <171490001@hpcuhe.cup.hp.com>
Source record: 119657

Anyone need a computer for Packet? I have two Heath H-89, and one H-8 computersthat I need to get out of my house, wife says OUT! These computers run a system from a floppy disk. They are NOT compatible with anything else in the world. If you have some programing experience, or want to get some, this systemis for you. I have a DOS system and also CPM. I have Basic, Cobol, and Assembly language assemblers. The H-89's are Z80 based, the H-8 is 8080. These systems are ideal for a Packet/logging system for someone who wants to play with software. I have pounds of documentation that will go with the systems, along with all kinds of software and utilities. The H-89's are terminals with the CPU built-in. The H-8 is a standalone CPU with expandable card cage. These systems provided a real learning experience for me, they are not for everyone, they are not turn-key, but I will let these go CHEAP. If you got the time, I got the Packet Computer for you. First person gets a shot at the best software choices.

```
**************************************************************************
* The opinions expressed are mine, and mine alone *
* *
* WB6LPJ - Cessna 172A N7770T - You can lead a horse to water, but a *
* pencil must be lead. *
**************************************************************************
```

539. FPGAs for kit designing - summary #1

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 20:41:42 UTC
From: arnim@actrix.gen.nz
Message-ID: <1993Sep1.204142.12901@actrix.gen.nz>
Source record: 119655
Cross-posted to: sci.electronic,rec.radio.amateur.homebrew

I agree, from a professional perspective, that as time goes by, general purpose TTL-type logic is going to become harder to get and consequently significantly more expensive, with perhaps the exception of high usage driver/receiver/latch octals and similar quasi-I/O oriented formats.

The FPGA market is booming, I'd be very surprised if it wasn't the fastest growing sector of VLSI design. While it started with MMI (AMD now) PALs in the early '80s, and then grew a little with the Altera EPROM slighlty-bigger-than-PALs, it really became useful from a logic integration point of view when Xilinx jumped into the scene.

Modern FPGAs, as opposed to PALs, are made with
a) _lots_ of Flip Flops internally
b) lots more I/O than PAL-type products.

Now, from a hobbyist point of view, the Xilinx tools are pretty dear. I don't know what the US price is for an entry level system, but to be fair, of all the development tools I have worked with in 15 or so years in the game, the Xilinx tools are the most complete and bug-free. From a hobbyist point of view, another bonus with the Xilinx approach is that the parts are SRAM based, which makes them quite easy to reprogram. If you use byte-wide EPROM, you will sacrifice quite a few I/O pins, but if you're doing download from a processor, that can be quite sweet if you do it serially.

From a cost perspective, at least from here in NZ, the Altera family of FPGAs, which are EPROM based, have the cheapest tools at entry level. The entry level stuff wouldn't do everything I'd want, but the top end stuff looks really capable. However, by then the Altera tools are no cheaper than anyone else.

Xilinx has been sort of cloned by a crowd called Concurrent, who were recently bought out by Atmel. That too is an SRAM based FPGA.

Unfortunately, the majority of the remaining offerings are based on anti-fuse techology, which would be quite unsuitable to the hobbyist market, I'd think. Program up a $40 part, if its wrong, throw it away. That includes Actel, TI, Crosspoint (really swish stuff!!!) and a few others.

For my own part I am fortunate to have ready access to Xilinx tools, and I am rolling my own entry-level ISDN card for PC. While I will need a commercial S-interface chip, and it is a lot easier to have a commercial D-channel handler, I am rolling my own B-channel handler,

ie. FIFO/DMA/HDLC handling in the Xilinx.

For the hobbyist side, ISDN is too expensive in this country, and a large part of that cost is the stupidly expensive CPE cost, ie. to get a useful TA or TE. But that is another issue...

Enough, I'd be curious to see what your FPGA packages cost State-side...

Arnim arnim@actrix.gen.nz or arnim@digitech.co.nz

540. Re: Project 6: 80M QRP `colorburst' CW xmtr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-01 23:04:18 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CCp6r6.Atq@news.Hawaii.Edu>
Source record: 119656

Jeff

541. 311A tube specs needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-02 05:18:55 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep2.051855.4585@cyphyn.UUCP>
Source record: 119660

Anyone know the tube specs for a 311A/B (NOT 311/211!)
Made by Western Electric....
Its some kind of 5 pin , grip top, pentode...sort of like a 24A

I can only guess that the filament is 2.5 volts (ohm meter sez its there!)

The rest I can safly say is screen= 67.5v and plate=90-180v.

But...I gotta find the filament volts.

tnx

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

542. Re: 1/4 shaft extensions/couplings

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-02 07:55:32 UTC
From: drew@trl.oz.au
Message-ID: <drew.41.0@trl.oz.au>
Source record: 119658

In article <9308301904.AA10318@wrdis01.robins.af.mil> lakeith@wrdis01.robins.af.MIL (CONTRACTOR Larry Keith;WR-ALC/653 CCSG/SCDD) writes:
>From: lakeith@wrdis01.robins.af.MIL (CONTRACTOR Larry Keith;WR-ALC/653 CCSG/SCDD)
>Subject: 1/4 shaft extensions/couplings
>Date: 30 Aug 93 19:04:52 GMT
>Does anyone know of a source for 1/4 shaft extensions and shaft
>couplings??
>
>I need a few of these for an antenna tuner project.
>
>
>73,
>
>Larry KQ4BY

Hi Larry,

If it's a simple insulated 1/4" to 1/4" coupling that you need, consider using a short length of 1/4" i.d. rubber fuel hose. Push fit over your 1/4" shaft, then clamp with fuel hose clips (from auto parts suppliers). Off-cuts from pot shafts can be used for extensions.

Also, Ocean State Electronics have some couplers which may suit.

73, Drew, VK3XU.

543. TV SAP Audio channel decoder circuit wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-02 15:00:34 UTC
From: jordan@ll.mit.edu
Message-ID: <1993Sep2.150034.25627@ll.mit.edu>
Source record: 119659

I am looking for a circuit to decode the Second Audio
channel that is sent out on some TV stations, and available
on Stereo TVs & VCRs. Our local PBS affiliate is carrying
the BBC World Service on the SAP channel, and I'd like to be
able to hear it on something I can carry around the house.
Assume I can
tune in the signal, and access the audio at the FM
discriminator. I'm planning on modifying a standard FM
portable radio to get CH2 sound.

Is the SAP audio on an FM subcarrier like the SCA channel on some FM stations?
If so, I've seen circuits using PLL chips (NE565) that look fairly simple.

Any info on the characteristics of the signal or pointers to
practical circuits would be appreciated. I know the stereo
difference signal is DBX encoded, but I'm not sure about the
SAP stuff. For the usual BBC programme material (news &
discussions) I don't care about hifi. (Its bound to be
better than HF !)

Thanks

Mike Jordan KC1RP (jordan@ll.mit.edu)

544. Re: TV SAP Audio channel decoder circuit wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-02 16:59:04 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCCqKIG.6Kw@netcom.com>
Source record: 119661

In article <1993Sep2.150034.25627@ll.mit.edu> jordan@ll.mit.edu (Mike Jordan) writes:
>
>I am looking for a circuit to decode the Second Audio
>channel that is sent out on some TV stations, and available
>on Stereo TVs & VCRs. Our local PBS affiliate is carrying
>the BBC World Service on the SAP channel, and I'd like to be
>able to hear it on something I can carry around the house.
>
>Is the SAP audio on an FM subcarrier like the SCA channel on some FM stations?
>If so, I've seen circuits using PLL chips (NE565) that look fairly simple.
>
I know the stereo
>difference signal is DBX encoded, but I'm not sure about the
>SAP stuff. For the usual BBC programme material (news &
>discussions) I don't care about hifi. (Its bound to be
>better than HF !)

The SAP is similar to SCA on FM radio, except that the audio is DBX
encoded, and the carrier is (I think) 5 times horizontal freq (about 78.6Khz)
and that carrier is FM modulated.
If I remember rightly, DBX is similar to Dobly in that high audio freqs
are boosted during low volume periods. Rolling off the audio highs
will probably be good enough.

545. Re: Need-Interface for PC for CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-02 21:22:49 UTC
From: Tom
Message-ID: <1993Sep2.162249.7293@titan.ksc.nasa.gov>
Source record: 119662

In article <1993Aug18.020929.24297@en.ecn.purdue.edu>, n9ljx@en.ecn.purdue.edu (Scott A Stembaugh) says:
>
>In article <2069@arrl.org> mtracy@arrl.org (Michael Tracy) writes:
>>The ARRL Field Services BBS has a shareware program called HAMCOM21.ZIP
>>that serves as a terminal program for use with a very simple circuit.
>>The diagram of this circuit is contained in the program's online help.
>>The FSD BBS can be reached at: (203) 666-0578. The terminal settings are
>>the standard 8 bits, No parity, 1 stop bit (8N1) with baud rates up to 9600.
>
HAMCOMM2.2 can be found on oak.oakland.edu

The schematics given works great and only cost about $5 to build (took about an hour). I was able to decode W1AW code bulletin (at various speeds) and RTTY. This sure beats buying a multimode TNC when one can't yet afford it. By the way it will work with any receiver as long as you have an output audio port (even my cheap $20 SONY receiver works).

Good luck.
Tom

546. Re: OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 02:12:55 UTC
From: brian@nothing.ucsd.edu
Message-ID: <266977INNf6j@network.ucsd.edu>
Source record: 119663

You aren't going to believe this, but they're still manufactured.
Check the listing for WPI corp in the Newark catalog. (page 608 in my
edition). They're even reasonably priced!
- Brian

547. How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 09:58:51 UTC
From: gb@dixie.cs.unc.edu
Message-ID: <GB.93Sep3095851@dixie.cs.unc.edu>
Source record: 119665
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Can anyone point me to a reference that describes how commercial "vector impedance meters" work? I'm not interested in the traditional bridge circuits with variable components, but rather direct reading instruments. I can postulate multiple ways it *might* be done, but I suspect that there are methods that are not so obvious that result in better performance. I'm most interested in the circuitry for interface to the unknown load (thus making voltages and phases available for measurment).

I intend to check out the Hewlett-Packard Journal in hopes of finding something there. Any other sources?

Thanks
gb wa4fut

548. solar modules needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 11:39:28 UTC
From: cable01@mailserv.zdv.uni-tuebingen.de
Message-ID: <cable01.747056368@mailserv>
Source record: 119664

hey,
I'm looking for information about solar technology.
Are there any companies who produce solar power modules
of about 2 kW. Does anybody know if one can buy
low voltage refrigerators which work with solar energy.
I also need information about medical equipment which
works on solar technology. For example lamps, centrifuges or
other medical machines.
It would be nice to get some adresses of companies (worldwide)
or any other information (e.g.FAX-No.or Tel.No.).

thanks, Jochen
--
==
= Jochen Leipold - University of Tuebingen - Dep. of Inorg. Chemistry II =
= (cable01@mailserv.zdv.uni-tuebingen.de) - Germany - =
==

549. Re: solar modules needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 15:56:30 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep3.155630.6624@ke4zv.atl.ga.us>
Source record: 119666

In article <cable01.747056368@mailserv> cable01@mailserv.zdv.uni-tuebingen.de (Joachim Leipold) writes:
>hey,
>I'm looking for information about solar technology.
>Are there any companies who produce solar power modules
>of about 2 kW. Does anybody know if one can buy
>low voltage refrigerators which work with solar energy.
>I also need information about medical equipment which
>works on solar technology. For example lamps, centrifuges or
>other medical machines.
>It would be nice to get some adresses of companies (worldwide)
>or any other information (e.g.FAX-No.or Tel.No.).

I could direct you to one of the greener groups where you would
be directed to a granola munching company called Real Goods, but
in an effort to save you a bit of money, I'll point you instead
to a more nuts and volts company called Atlantic Solar Products.
Their address is

Atlantic Solar Products Inc.
9351 J Philadelphia Road
PO Box 770060
Baltimore Maryland 21237

Telephone 301-686-2500
Fax 301-686-6221
Toll free (in the US) 800-537-1566

They offer packaged PV systems of up to 19 kwh/week with peak power
delivery of 6 kw. Or they offer panels, regulators, batteries, inverters,
etc to custom tailor your own system. They also offer low voltage
refrigerators, pumps, lights, etc. In addition, they carry windmills,
multi-fuel generator sets, gas refrigerators, DC desktop computers,
and even a solar air conditioner.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

550. Re: OCTAL PLUGS NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 16:40:38 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep3.164038.18522@cyphyn.UUCP>
Source record: 119575

ah ha! found you! via that cross post.

Also...re use of burned out tubes....reuse the bases...I've done that
to make plug in coils....epoxy glue the form onto out side of the base.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

551. PC-board layout utils for the Mac SE?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 17:16:03 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Sep3.171603.9970@news.uiowa.edu>
Source record: 119667

I'm trying to find any PC-board layout utils for the Mac SE. Preferrably freeware/shareware, but if they're affordable commercialware, we can deal with that.

TNX es 73 de Doug N0Y?? or N0Z??
02W 04D 23H 17M and counting...

--
__ /| | Douglas J Renze | Charter Member, Popular Front
\'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
=(___)= | drenze@isca.uiowa.edu |
U | Douglas-Renze@uiowa.edu | Evolution Now!

552. Re: How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 18:49:47 UTC
From: alanb@sr.hp.com
Message-ID: <CCsKB0.3I7@srgenprp.sr.hp.com>
Source record: 119527
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Gary Bishop (gb@dixie.cs.unc.edu) wrote:
: Can anyone point me to a reference that describes how commercial
: "vector impedance meters" work?

This is a guess, so take it for what it's worth: I think a vector impedance meter is basically a 1-port vector network analyzer. It measures the relative amplitude and phase of a signal going into the device under test and calculates the impedance from that.

AL N1AL

553. adding synthesed frequencies

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 19:31:34 UTC
From: dgarvin@relay.nswc.navy.mil
Message-ID: <1993Sep3.193134.19461@relay.nswc.navy.mil>
Source record: 119573

I saw something on the net awhile ago about adding synthesed frequencies to a crystal conrolled radio. Is the possible and how would I do it. The radio that I have uses crystals in the 10-13 mhz range and operates in the 2 meter commercial band.

thanks
--
--
| David W. Garvin, Jr. |
| KD4YWN EMT-A |
| NSWCDD |
| Code L13U |
| Dahlgren, VA 22448-5000 |
| dgarvin@relay.nswc.navy.mil |
| (703) 663-6960 work |
--

554. Any interest in a DSP conference?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 19:45:02 UTC
From: jbloom@arrl.org
Message-ID: <2175@arrl.org>
Source record: 119569
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew

Some of us here at ARRL HQ have been discussing the idea of
putting together a conference, probably for next year, on digital
signal processing in Amateur Radio. This would be along the
lines of the ARRL Digital Conference (nee Computer Networking
Conference), but focussing on applications of DSP to ham radio.
I've little doubt that we could get people to attend a
conference like that, but I'm not sure whether we could get
people to submit papers for it. There's not much point in having
a conference unless you have presentations! Since many of the
possible DSP applications apply to digital communications, there
may be some cross-over between the existing Digital Communications
Conference and the proposed DSP conference, too.
So, I'm sounding the waters... are there folks out there who
would be interested in submitting papers for such a conference?
And are there any Amateur Radio organizations (clubs, etc) that
would be interesting in hosting same? Or is this a dumb idea?
Please let me know if you are interested.

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

555. Re: How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 21:21:20 UTC
From: jeff@nsr.hp.com
Message-ID: <268cgg$fce@hpscit.sc.hp.com>
Source record: 119578
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Gary Bishop (gb@dixie.cs.unc.edu) wrote:
: Can anyone point me to a reference that describes how commercial
: "vector impedance meters" work? I'm not interested in the traditional
: bridge circuits with variable components, but rather direct reading
: instruments. I can postulate multiple ways it *might* be done, but I
: suspect that there are methods that are not so obvious that result in
: better performance. I'm most interested in the circuitry for
: interface to the unknown load (thus making voltages and phases
: available for measurment).

: I intend to check out the Hewlett-Packard Journal in hopes of finding
: something there. Any other sources?

: Thanks
: gb wa4fut

If you can get your hands on a copy of "The Impedance Measurement
Handbook" (an HP publication), you'll find what you're looking for.
The HP literature number is 5950-3000.

Jeff
--
==
Jeff Gruszynski
Semiconductor Test Equipment
Systems Engineer
Hewlett-Packard Company
==
(415) or T 694-3381
jeff@hpmvd069.hp.com -or- jeff@hpmvd069.nsr.hp.com
jeff@hpuplca.hp.com
==

556. Re: How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 23:05:04 UTC
From: glenne@sad.hp.com
Message-ID: <CCsw4H.BEL@srgenprp.sr.hp.com>
Source record: 119614
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Alan Bloom (alanb@sr.hp.com) wrote:
: Gary Bishop (gb@dixie.cs.unc.edu) wrote:
: : Can anyone point me to a reference that describes how commercial
: : "vector impedance meters" work?

: This is a guess, so take it for what it's worth: I think a vector
: impedance meter is basically a 1-port vector network analyzer. It
: measures the relative amplitude and phase of a signal going into the
: device under test and calculates the impedance from that.

I think it is fair to say that vector impedance meters are a special case of vector network analyzers. Perhaps it depends upon your context but I generally think of an impedance meter (vector is implied) as a low frequency case of a vector network analyzer. What is special about the low frequency case is that it may be possible to build sufficiently good voltage and current sources and probes such that their contribution to the measurement error is acceptably small.

The problem is indeed in the circuitry which connects the device to be measured to the measuring equipment. Beyond fairly low frequencies and minimal precision, approaches which consider the characteristics and effect of the measurement equipment and environment upon the device to be measured must be used. As Al suggests, this is most often in the form of a network analyzer using error correction.

The connections to the device are made by way of a transmission line or medium. These connections are in actuality always with some kind of distributed network (the connections) but at low frequencies they were considered to be lumped elements or else ignored. The characteristics of the measurement hardware are first measured and then used to remove errors from the measured data. The process of measuring the measurement hardware is known as "calibration" and involves some combination of known physical devices, generally of the same general size and interface/connector type as the device under test (DUT). There are many different calibration techniques but one of the oldest ones involve the use of precision open circuits (with fringing effects included), short circuits and terminations (of the same characteristic impedance as the measurement environment). This is referred to as an OST or OSL (open,short,termination or open,short,load) calibration. Thes precision known devices are known as calibration standards.

If these standards' impedances/characteristics are accurately known, the measured values may be used to solve equations which can produce "error terms" which describe the measuring hardware. This hardware often consists of a signal source followed by a directional device

(directional couplers or bridges are most common). Along with the description afforded by the error terms, a virtual analyzer which is error free (given some assumptions of single-mode, linear systems, etc) can be mathematically constructed. The actual measured data can be suitably processed to view the DUT as it would look if viewed/measured from a virtual machine which was perfect.

The measurement is thus made on the DUT in a known impedance system by a near-perfect virtual measuring tool.

At the hardware level, this is basically a stimulus-response measurement and may be via a single port as Al suggested or two or more ports depending upon the DUT. Since the signals can be completely separated (mathematically at least) into forward/stimulus and reverse/response components, the DUT can be completely described. Although at high frequencies this is most often done using S parameters, other formats like SWR, group delay and real/imaginary (impedance or admittance) are directly available as well. The two signals are generally downconverted to some convenient IF and then synchronously demodulated (IQ demodulators do this). The comparison (ratio) of the I and Q (real&imaginary) components of the stimulus and response provide characterization of the DUT.

There is at least one other technique for making complex measurements of devices not requiring synchronous detection and using only scalar detectors. This technique called a "six port measurement" and requires an increased amount measrement hardware and computation and is generally more complex and slower.

Much of the ongoing work in network measurement involves calibration techniques and devices.

Gary, I'm not sure what further level of detail you might want WRT measurement hardware but I'll be glad to try to provide it if I can. There are a number of publications covering many of the above processes.

73

Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

557. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-03 23:10:07 UTC
From: jones@San-Jose.ate.slb.com
Message-ID: <268isg$62@k2.sj.ate.slb.com>
Source record: 119582
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Jonathan M Hill (jmhill@duck.WPI.EDU) wrote:
: Here is a project that I'd like to see, first a lead in introduction;

: I read in a journal or two, fairly recently, reports of several companies
: that are planning to discontinue the manufacture and sales of discrete logic
: TTL chips. One article pointed out that such TTL logic chips are often used
: as, "glue" logic, which used to be implemented in dicrete chips. Such, "glue"
: logic today is often implemented in some form of logic gate array or other
: scheme. Gate arrays allows the functionality of many TTL chips to be programmed
: into a single chip.

: If you look inside one of the early PCs, you will notice MASSES of TTL
: chips. A newer PC will have much fewer chips. Most of the TTL chips are
: replaced by a few gate array chips or application specific chips.

: Gate arrays are a natural next step in logic integration, one form is the
: field programmable gate array(FPGA). Such a device, I would suppose, would be programmed
like an EPROM. Thus using PC software, a design is developed, then
: programmed into the gate array. A single gate array can replace many different
: TTL devices wired in a myriad of ways. Just think what this does to inventory!

: So down to the projects; First of all, a simple FPGA programmer that would
: allow designs to be downloaded from a PC, or copied. Second, a software package
: to allow design development.

: Jonathan/KA1WZN
: jmhill@ee.wpi.edu

Three or four years ago, Popular Electronics (or was it Radio Electronics? I
can never keep the two straight) had a "PEEL" programmer that programmed
an electrically erasable "PAL". It was a kind of hoaky gadget, but it worked
(after I replaced the bad Z80 parallel chip). I did one design with it, which
essentially was a "traffic signal emulator" - along with a 555 timer, the
thing would cycle the "north-south" LED's through green (three pulses, as I
recall) then yellow, while holding "east-west" at red, then change north-south
to red and go through green and yellow on east-west. (It was a hardware
simulation of some software, believe it or not!)

Anyway, my big complaint was that the PEEL chips were essentially unobtainable.
So, if you do this, make sure you use a "standard" chip sold by somebody like
Digi-Key or JDR.

Also, please be sure to be able to use "erasable" or "reprogrammable" chips.
I had to reprogram the chip probably a dozen times before I got the code
right. (Since it was electrically erasable, it only took a fraction of
a second to erase, but I don't mind UV EPROM times.)

Clark
--
Disclaimer: The opinions expressed above are mine and not those of Schlumberger because they are NOT covered by the patent agreement!

Phone: (602) 345-3638 Internet: jones@sj.ate.slb.com
Packet: N7RPQ@K7BUC.AZ.USA.NA RF: N7RPQ/AA
Snail: Clark Jones, Schlumberger Technologies, 7855 S. River Pkwy #116, Tempe, AZ 85284-1825

558. NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-04 16:32:00 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Sep4.163200.22886@mksol.dseg.ti.com>
Source record: 119568

I've heard in space.news that NASA broadcasts continuous coverage
of it's missions via satellite and that anyone with a dish can
receive it. I dont own a TV much less a satellite dish system but
I'd certainly like to see that channel. Has anyone tried picking
it up with homebrew equipment? It'd be worth the effort to me
to roll my own receiver. Who sells LNA's and downconverters for
this kind of stuff?
Art.

559. 311-A/B Vaccuum tube info needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-04 16:59:55 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep4.165955.25690@cyphyn.UUCP>
Source record: 119590

The tube is an 5 pin older one, top grid connector and is a pentode.

The info I really need is the filament volts...I suspect it's 2.5v 1.75a

tnx

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

560. A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-04 22:47:55 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Sep4.224755.7687@news.uiowa.edu>
Source record: 119576

Sorry for what may be a silly question, but this is the only place I can think of to post it, so here goes...

I'm currently studying to upgrade to the General class license, and I'm wondering...just *what* does a capacitor do???? Yes, I know that, "a capacitor is a device which stores energy in the form of an electrostatic field," but what's the practical upshot of this...ie, why would I want to store energy in an electrostatic field, especially, if as the ARRL General Class License Manual says, once a capacitor is charged, it blocks the flow of current in a DC circuit.

Please explain this in relatively simple terms...I *think* I know more about it than this, but I want to be sure I *understand* it rather than memorizing some arcane incantation.

Tnx es 73 de Doug N0Y??
02W 06D 04H 48M and counting...

PS, if you like, please respond e-mail so as not to take up bandwidth with a gazillion posts to the net.

dit dit

--
__ /| | Douglas J Renze | Charter Member, Popular Front
\'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
=(___)= | drenze@isca.uiowa.edu |
U | Douglas-Renze@uiowa.edu | Evolution Now!

561. Re: A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-04 23:22:19 UTC
From: jfh@netcom.com
Message-ID: <jfhCCurL7.4y9@netcom.com>
Source record: 119581

drenze@icaen.uiowa.edu (Douglas J Renze) wrote:

>I'm currently studying to upgrade to the General class license, and I'm
>wondering...just *what* does a capacitor do???? Yes, I know that, "a capacitor
>is a device which stores energy in the form of an electrostatic field," but
>what's the practical upshot of this...ie, why would I want to store energy
>in an electrostatic field, especially, if as the ARRL General Class License
>Manual says, once a capacitor is charged, it blocks the flow of current in
>a DC circuit.

I'm not going to attempt to answer the question (I'm sure I'd make a mess
of it), but I'll give you a book recommendation: The ARRL's "Understanding
Basic Electronics". I think it's a much better book than "Now You're
Talking", which you may have used to get your first license.

You may be able to find it in a local store. There's also an order form in
QST, and although they don't actually say that you can order by phone, they
give a phone number in the ad - 203-666-1541.

--

Jack Hamilton jfh@netcom.com kd6ttl@n0ary.#nocal.ca.us.na packet
Post Office Box Box 281107 San Francisco, California 94128 USA

562. Re: A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 01:26:34 UTC
From: jaevans@clarknet.clark.net
Message-ID: <26bf8a$3ul@clarknet.clark.net>
Source record: 119571

>drenze@icaen.uiowa.edu (Douglas J Renze) wrote:

>>I'm currently studying to upgrade to the General class license, and I'm
>>wondering...just *what* does a capacitor do???? Yes, I know that, "a capacitor
>>is a device which stores energy in the form of an electrostatic field," but
>>what's the practical upshot of this...ie, why would I want to store energy
>>in an electrostatic field, especially, if as the ARRL General Class License
>>Manual says, once a capacitor is charged, it blocks the flow of current in
>>a DC circuit.

I ditto the respondent's message about the book, but a simple view of a
capacitor is this:

A capacitor is a device which opposes a change of voltage across
its terminals. Likewise, an inductor is a device which opposes a change
of current through it. This will seem obvious when you start to learn
about the voltage lagging/current lagging effects of each device.

John A. Evans, Capt, USAF "My number one goal as a
VHDL/EDA Engineer runner is to live long enough
Ft Meade, MD 20755-2604 to place in my age group!!!"

jaevans@clark.net Linux - the OS of choice !!

Once data encryption is outlawed, only outlaws will have data encryption !!!
---

563. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 03:07:08 UTC
From: hanauerj@dmapub.dma.org
Message-ID: <CCv1zx.BC2@dmapub.dma.org>
Source record: 119570
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I'd like to see a kit for an RF cannon which is capable of causing interference or out and out disabling of car or fixed location radios, stereos, and such equipement. This equipement must obviously operate in a very descrete manner. It must also be cost effective. It would be nice if this thing could be portable. Can you generate a kit that would do this?
John Hanauer -- hanauerj@dmapub.dma.org

564. Do transmitters erase tapes?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 04:08:48 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <26boog$ki4@hobbes.cc.uga.edu>
Source record: 119574
Cross-posted to: sci.electronics,alt.radio.pirate,rec.radio.amateur.homebrew

Query: Do low-power VHF transmitters erase videotapes or audio tapes?

I have a Ramsey FM-10 putting out a few milliwatts to relay my stereo
throughout the house. Do I need to keep videotapes away from it?

I'd *think* not, because the EM field from the speakers and the TV set
would be a lot stronger, but can anyone confirm experiences erasing
(or not erasing) tapes with VHF?

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

565. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 14:36:28 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep5.143628.13664@ke4zv.atl.ga.us>
Source record: 119572

In article <1993Sep4.163200.22886@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:
>I've heard in space.news that NASA broadcasts continuous coverage
>of it's missions via satellite and that anyone with a dish can
>receive it. I dont own a TV much less a satellite dish system but
>I'd certainly like to see that channel. Has anyone tried picking
>it up with homebrew equipment? It'd be worth the effort to me
>to roll my own receiver. Who sells LNA's and downconverters for
>this kind of stuff?

Satellite TVRO systems are commonly available. I saw one dealer at Dayton selling complete C band systems for $199. Radio Shack carries a couple in their catalog, with one priced at $599. Many of the usual consumer electronics companies such as Magnavox, Uniden, etc offer complete systems. Even an old line ham company, R.L. Drake, offers a line of TVRO equipment.

Most C band signals are scrambled and you have to buy a decoder box and pay a monthly fee to watch the channels. (Basically the same things that are available on cable.) But NASA Select is *not* scrambled. If that's all you want to see, and it's well worth watching, then you can get it fairly cheaply if you have room for a 6 to 10 foot dish and a clear view of the southern sky.

While you can homebrew a TVRO system, it isn't very easy without access to good microwave test equipment, and the commercial gear is cheap. If you're on REA, your utility may offer a dish package for a monthly charge. Mine offers a turnkey setup for $6 a month plus any descrambling fees. That beats cable pricing, and *you* get to select which channels to carry while not having to buy any equipment or concern yourself with any maintenance.

Of course, you'll have to buy a TV too.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

566. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 18:43:20 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <26dc08INNl6r@rave.larc.nasa.gov>
Source record: 119577
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <CCv1zx.BC2@dmapub.dma.org> hanauerj@dmapub.dma.org (John Hanauer) writes:
>I'd like to see a kit for an RF cannon which is capable of
>causing interference or out and out disabling of car or
>fixed location radios, stereos, and such equipement. This
>equipement must obviously operate in a very descrete manner.

Sorry, but RF drops off in intensity with the square of the distance, which means that while it's trivial to produce a strong local field, it requires an exponentially larger amount of power to produce a field of the same power at a distance. While Messrs. Yagi and Uda have helped a lot here, the nature of the beast is such to make a device like this impractical.

You might want to consider using some method of conveying force whose energy drops off more linearly with distance, like a lead projectile. While such a projectile still requires an exponentially increasing amount of power to cover a linearly increasing distance, the curve is much flatter. In addition, of course, it has the advantage of increased directionality.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

567. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-05 18:50:38 UTC
From: scoggin@delmarva.com
Message-ID: <26dcduINNfe9@blackhole.delmarva.com>
Source record: 119579

In article BC2@dmapub.dma.org, hanauerj@dmapub.dma.org (John Hanauer) writes:
> I'd like to see a kit for an RF cannon which is capable of
> causing interference or out and out disabling of car or
> fixed location radios, stereos, and such equipement. This
> equipement must obviously operate in a very descrete manner.
> It must also be cost effective. It would be nice if this
> thing could be portable. Can you generate a kit that would
> do this?
> John Hanauer -- hanauerj@dmapub.dma.org

Small tactical nuclear weapons exploded in the neighborhood should generate sufficient Electro-Magnetic Pulse to do the job. I imagine the CIS military may have some leftover :-) Although the government might get a tad upset.

I think the inverse square law (not to mention the Communications Act of 1934) might make this a useless proposition.

- John

+--+
| John K. Scoggin, Jr. Email: scoggin@delmarva.com |
| Supervisor, Network Operations Phone: (302) 451-5200 |
| Delmarva Power & Light Company Fax: (302) 451-5321 |
| 500 N. Wakefield Drive NOC: (800) 388-7076 |
| Newark, DE 19714-6066 |
| The opinions expressed are not those of Delmarva Power, simply the |
| product of an over-active imagination... |
| Time is Nature's way of preventing everything from happening at |
| once; it's not working too well here in NetOps! |
+--+

568. Re: Grid Dip Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 00:00:38 UTC
From: drew@trl.oz.au
Message-ID: <drew.42.0@trl.oz.au>
Source record: 119580

In article <1993Aug31.201853.3974@kpc.com> nat@thorn.kpc.com (Natarajan Gurumoorthy) writes:
>From: nat@thorn.kpc.com (Natarajan Gurumoorthy)
>Subject: Grid Dip Meters
>Keywords: Dip
>Date: Tue, 31 Aug 1993 20:18:53 GMT
>Hello,
> Could anybody send me pointers to articles on homebrewing a grid
>dip oscillator. Alternately could someone send me circuit that I could
>build. I am primarily interested in the HF bands.
>Thanks in advance.
>Nat.
>
>--
>--
>Natarajan Gurumoorthy AB6SJ Kubota Pacific Computer, Inc.
>nat@kpc.com 2630 Walsh Avenue
>Phone 408 987 3341 Santa Clara, California 95051.

Hi Nat,

A rather interesting dip oscillator appeared in the April '87 issue of Radio Communication (the RSGB journal); entitled;

"The G3WPO FET Dip Oscillator MK2" by Tony Bailey.

Uses a pair of dual-gate MOSFETS in a push-pull Kaliatron circuit arrangement. It is a more serious attempt at something measurably better than the usual "run-of-the-mill" dippers. Frequency range is 800kHz to 170MHz.

73 Drew, VK3XU

569. Re: TV SAP Audio channel decoder circuit wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 14:00:22 UTC
From: maessm@rpi.edu
Message-ID: <MAESSM.93Sep6140022@vccsouth03.rpi.edu>
Source record: 119586

In article <wa2iseCCqKIG.6Kw@netcom.com> wa2ise@netcom.com (Robert Casey) writes:

If I remember rightly, DBX is similar to Dobly in that high audio freqs
are boosted during low volume periods. Rolling off the audio highs
will probably be good enough.

I believe that DBX also has 2:1 compandoring (i.e., a 2 dB change of signal
level is converted to a 1 dB change) above a certain threshold. This requires
a gated expandor at the receiving end in order to decode.
--
Mat Maessen N2NJZ | maessm@rpi.edu
------------------------------ +---------------------------------
disclaimer: Anyone NOT singing will have a can of Foster's lobbed at
their heads.

(c) 1993 Fake-sig Co., Inc.
----

570. Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 14:08:37 UTC
From: rick@cs.sunysb.edu
Message-ID: <26fg95$1tk@newsserv.cs.sunysb.edu>
Source record: 119585
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

Does anyone happen to have a pointer to a PD program that will take
a set of S parameters and crunch them backwards into a Spice
compatible model? Ideally, I would like to get something that
will produce models for both BJTs and the various types of FETs.
I have read that Compact Software's SuperCompact can produce
such models, but for casual tinkering, I am sure the price is
way of of my league :-)

Alternatively, I would appreciate any pointers to literature that
would describe the search algorithms for constructing such models
from S params.

Thanks - Rick Spanbauer, SUNY/Stony Brook

571. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 17:52:52 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep6.175252.6021@cyphyn.UUCP>
Source record: 119587
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I 'd like to see kits that use parts one can actually get / still get.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

572. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 18:57:28 UTC
From: ted@xio.ericsson.se
Message-ID: <1993Sep6.185728.13433@ericsson.se>
Source record: 119583
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

In article <26fg95$1tk@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer) writes:
>Does anyone happen to have a pointer to a PD program that will take
>a set of S parameters and crunch them backwards into a Spice
>compatible model?

Principally, this is not possible, since SPICE-models for MOS och BJT
are large-signal models and the s-parameters describe the small-signal
behaviour in a working point. Of course, it is possible to extract a
small-signal only model for SPICE, but what's the point?

The other way is OK and actually no special programs are needed for this. The
methods are described in books.

--
/// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
/// ERICSSON COMPONENTS AB | S-164 81 KISTA, SWEDEN ///

573. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 20:25:58 UTC
From: rick@cs.sunysb.edu
Message-ID: <26g6cm$53o@newsserv.cs.sunysb.edu>
Source record: 119584
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

T/TT Ted Johansson (ted@xio.ericsson.se) wrote:
: In article <26fg95$1tk@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer) writes:
: >Does anyone happen to have a pointer to a PD program that will take
: >a set of S parameters and crunch them backwards into a Spice
: >compatible model?

: Principally, this is not possible, since SPICE-models for MOS och BJT
: are large-signal models and the s-parameters describe the small-signal
: behaviour in a working point. Of course, it is possible to extract a
: small-signal only model for SPICE, but what's the point?

Yes, I meant the small signal, linear model. It is useful to have
such a model to use in conjunction with SPICE, as one can build
and model eg amplifiers before building a prototype.

: The other way is OK and actually no special programs are needed for this. The
: methods are described in books.

Reference, please?

: /// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///

Rick Spanbauer
SUNY/Stony Brook

574. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-06 23:57:12 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <26gioo$5jb@hobbes.cc.uga.edu>
Source record: 119588
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Sep6.175252.6021@cyphyn.UUCP> randy@cyphyn.UUCP (Randy) writes:
> I 'd like to see kits that use parts one can actually get / still get.

That is a perennial problem for those of us that write magazine articles
or design kits. The supply of available parts is subject to unpredictable
fluctuation. If Radio Shack comes out with an interesting IC, then you
can bet that by the time the article is published (maybe 9 months later),
they will no longer have it.

I *did* do *one* thing for the good of the hobby, though; I persuaded
Digi-Key to carry the NE602. That's my one good deed for electronics...

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

575. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 00:13:18 UTC
From: trimm@netcom.com
Message-ID: <trimmCCyJA6.1tv@netcom.com>
Source record: 119589
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <26gioo$5jb@hobbes.cc.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>In article <1993Sep6.175252.6021@cyphyn.UUCP> randy@cyphyn.UUCP (Randy) writes:
>> I 'd like to see kits that use parts one can actually get / still get.
>
>That is a perennial problem for those of us that write magazine articles
>or design kits. The supply of available parts is subject to unpredictable
>fluctuation. If Radio Shack comes out with an interesting IC, then you
>can bet that by the time the article is published (maybe 9 months later),
>they will no longer have it.
>
>I *did* do *one* thing for the good of the hobby, though; I persuaded
>Digi-Key to carry the NE602. That's my one good deed for electronics...

The kit I've been waiting for is the Comprimising EMI Exploitation Kit, which is often called Van Eck Phreaking. It's a box of maybe $75 worth of stuff that allows you to point an antenna at someone's CRT and duplicate their screen on your _own_ CRT. This is why Tempest and its predecessors were adopted by DoD. Dr. William Van Eck of PTT Netherlands demonstrated the device on a (PBS?) documentary, heck, it must be almost ten years ago. I have a crude scematic of such a device, but it looks like too much of a kludge for me to build, and I'm not an analog guy, so if it didn't work I might have a bit of a time with it.

--
Gary M. Watson
Trimm Industries Internet: trimm@netcom.com
North Hollywood, CA 91605 Compuserve 72242,3437
* See the Trimm RAID-Ready Disk Enclosures at Comdex Las Vegas Nov 15-19 *

576. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 03:33:20 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Sep7.033320.28801@mksol.dseg.ti.com>
Source record: 119591

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
: While you can homebrew a TVRO system, it isn't very easy without
: access to good microwave test equipment, and the commercial gear
: is cheap. If you're on REA, your utility may offer a dish package
: for a monthly charge. Mine offers a turnkey setup for $6 a month
: plus any descrambling fees. That beats cable pricing, and *you*
: get to select which channels to carry while not having to buy any
: equipment or concern yourself with any maintenance.

: Of course, you'll have to buy a TV too.

I'm an RF engineer and can probably assemble a one channel
receiver myself. I've got test equipment at work I can use on
weekends. Can you (or anyone) recommend a good source of
technical info for homebrew TVRO?
As for buying a TV... Perish the thought! I'd sooner be boiled
in oil! I'll convert/demod down to composite video or RGB and
run into an old C64 monitor.
Art.

577. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 12:45:09 UTC
From: ted@xio.ericsson.se
Message-ID: <1993Sep7.124509.23372@ericsson.se>
Source record: 119592
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

```
In article <26g6cm$53o@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer) writes:
>T/TT Ted Johansson (ted@xio.ericsson.se) wrote:
>: In article <26fg95$1tk@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer)
writes:
>: >Does anyone happen to have a pointer to a PD program that will take
>: >a set of S parameters and crunch them backwards into a Spice
>: >compatible model?
>
>: Principally, this is not possible, since SPICE-models for MOS och BJT
>: are large-signal models and the s-parameters describe the small-signal
>: behaviour in a working point. Of course, it is possible to extract a
>: small-signal only model for SPICE, but what's the point?
>
> Yes, I meant the small signal, linear model. It is useful to have
> such a model to use in conjunction with SPICE, as one can build
> and model eg amplifiers before building a prototype.
>
>: The other way is OK and actually no special programs are needed for this. The
>: methods are described in books.
>
> Reference, please?
>
>: /// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
>
> Rick Spanbauer
> SUNY/Stony Brook

--
/// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
/// ERICSSON COMPONENTS AB | S-164 81 KISTA, SWEDEN ///
```

578. Frequency interval

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:01:30 UTC
From: 9203117@rkw-lan.cs.up.ac.za
Message-ID: <9203117.88.747406890@rkw-lan.cs.up.ac.za>
Source record: 119593

Is there some way of changing the frequency receiving interval on a FM receiver. I have electronic knowledge and would appreciate references or direct instructions.

579. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:37:55 UTC
From: pgut1@cs.aukuni.ac.nz
Message-ID: <1993Sep7.133755.14355@cs.aukuni.ac.nz>
Source record: 119595
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In <trimmCCyJA6.1tv@netcom.com> trimm@netcom.com (Trimm Industries) writes:

>The kit I've been waiting for is the Comprimising EMI Exploitation Kit,
>which is often called Van Eck Phreaking. It's a box of maybe $75 worth
>of stuff that allows you to point an antenna at someone's CRT and
>duplicate their screen on your _own_ CRT. This is why Tempest and its
>predecessors were adopted by DoD. Dr. William Van Eck of PTT Netherlands
>demonstrated the device on a (PBS?) documentary, heck, it must be almost
>ten years ago. I have a crude scematic of such a device, but it looks
>like too much of a kludge for me to build, and I'm not an analog guy, so
>if it didn't work I might have a bit of a time with it.

Reading the start of this thread I was going to post a message on exactly this subject. I'd really like to get my hands on a device for doing this, but it involves (shudder) analog circuit design which isn't really my field (if you can't debug it with a logic analyzer I don't want to know about it :-). Having it available from some sort of reputable source would be nice - I've seen a few advertised in the same place as antigravity devices and time machines which doesn't really inspire any confidence.

Trying to convince people about how easy Tempest monitoring is is a bit like the old joke about buying Multics:

You find out about Multics from the literature or personal contacts. You decide you want one. You go out and get a rather large stick. You call up the salesman and invite him over. You say "I'd like to buy a Multics". He'll say "We don't sell those". You hit him with the stick and repeat "I'd like buy a Multics". He'd say "Wouldn't you rather have a ...". You hit him with the stick and...

If I could wave a device in their faces which can read the text off their monitors from outside the building it'd help just a tiny bit - people look at me funny when I wander around carrying a large stick :-).

Peter.
--
pgut1@cs.aukuni.ac.nz||p_gutmann@cs.aukuni.ac.nz||gutmann_p@kosmos.wcc.govt.nz
peterg@kcbbs.gen.nz||peter@nacjack.gen.nz||peter@phlarnschlorpht.nacjack.gen.nz
(In order of preference - one of 'em's bound to work)
-- Disarm today. Dat arm tomorrow --

580. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:40:45 UTC
From: ted@xio.ericsson.se
Message-ID: <1993Sep7.134045.25123@ericsson.se>
Source record: 119594
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

```
>>: In article <26fg95$1tk@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer)
writes:
>>
>>: The other way is OK and actually no special programs are needed for this. The
>>: methods are described in books.
>>
>> Reference, please?

I have lost my photocopies from som PESPICE book. Please, someone else help us!

/// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
/// ERICSSON COMPONENTS AB | S-164 81 KISTA, SWEDEN ///
```

581. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:44:39 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep7.134439.22935@ke4zv.atl.ga.us>
Source record: 119602

In article <1993Sep7.033320.28801@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:
>I'm an RF engineer and can probably assemble a one channel
>receiver myself. I've got test equipment at work I can use on
>weekends. Can you (or anyone) recommend a good source of
>technical info for homebrew TVRO?

An old book on the subject is The Satellite TV Handbook published by TAB. But most everything in it is now outdated. Back then the SOTA was a 120 degree LNA feeding low loss cable to a single conversion receiver with a 70 MHz IF and FM detector. Few people still use anything so crude. Most systems now use a 15 to 30 degree LNB at the feedpoint that block downconverts to the 1 GHz range. Then they use RG6 to feed a tunable stage to convert down to the 70 MHz IF and FM detector. A 6 foot dish with offset feed is pretty much standard now instead of the old 10 footers with symmetric feed, and will receive all the common C band satellites. If you also want Ku band, you need a dish with a finer surface finish than most of the fiberglass over chicken wire models being sold. A spun aluminum dish is a better choice in this case. You use the same type of LNB, but of course one that block converts from Ku to 1 GHz instead of from C band.

Since the satellites use polarization as a tool of frequency reuse, you have to have a feed that's designed to give good horizontal and vertical polarization separation. There are cross polarized feeds available with separate outputs, but a single feed will work if you don't mind mechanically rotating it. Having the ability to rotate the feed is important in any case so that you can optimize the polarization for a given look angle. Most C band birds use 12 transponder channels, and reuse those 12 channels in the horizontal and vertical planes to give a total of 24 transponders. On Ku it's less standardized with different birds having different numbers of channels, but all use the polarization method of frequency reuse.

Some satellites now routinely operate half transponder rather than full transponder, so it's useful to have a receiver that tunes in finer than whole channel steps, and one that has several different IF filter widths. You need 30 MHz for C band, 40-45 MHz for some Ku, and half of each of those for half transponder service. Audio will be subcarriered at 6.2 and 6.8 for some stereo feeds while others use 5.8 and 6.2 for stereo and 6.8 for a mono mix. You should figure on a fixed 6.8 MHz subcarrier receiver and a second tunable one for the other cases. The IF bandwidth of the aural subcarrier receivers should be switchable between 150 kHz, 75 kHz, and 25 kHz. You want a video low pass filter in the post detector amplifier to remove the audio subcarriers from the video.

Otherwise you'll suffer nasty beats. These filters also are usually
in "wide" and "narrow" versions with 5 MHz and 4 MHz being the two
choices. When the 5.8 MHz subcarrier is in use, you usually need
the "narrow" video filter.

One final thing. You need a perfectly clear view of the Clarke belt.
If you have to look through trees, or fringe over buildings, you'll
have lots of trouble getting good pictures. The satellites are "slotted"
2 degrees apart across the belt. Your antenna should have a sharp and
clean enough pattern to separate one satellite from it's adjacent
neighbors. The prime cable C band birds are currently buffered by
Ku birds on either side so you can get away with a somewhat less
good antenna. But that's unlikely to remain the case.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

582. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:46:41 UTC
From: ted@xio.ericsson.se
Message-ID: <1993Sep7.134641.25404@ericsson.se>
Source record: 119596
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

```
>>>: The other way is OK and actually no special programs are needed for this. The
>>>: methods are described in books.
>>>
>>> Reference, please?

I forgot, check Microwaves & RF, May 1993, p. 210. There is an article on the
subject.

/// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
/// ERICSSON COMPONENTS AB | S-164 81 KISTA, SWEDEN ///
```

583. Why are folded dipoles 300 ohms?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 13:56:24 UTC
From: millar@mervax.sanders.lockheed.com
Message-ID: <millar.44.0@mervax.sanders.lockheed.com>
Source record: 119598

We are trying to make an eight element repeater antenna for 447 MHz based on a Cushcraft phasing harness we found surplus. We have just the harness and not the antennas or mounting hardware.

Analysis of the phasing harness shows that each of the antennas needs to present 50 ohms for the total to look like 50 ohms for the whole array. We confirmed this with by placing 8 47-50 ohm 1/4 watt film resistors on the antenna connection points and looking at the reflected power. The harness exhibited a beautiful match at 440 MHz.

Looking at existing antennas of similar design, we note that each of the elements appears to be a folded dipole. We couldn't find any matching components.

The problem is that folded dipoles present an impedance of 300 ohms at the feed point. The phasing harness just won't work with that load.

Any helpful suggestions are welcome, thanks in advance

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

584. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 14:25:23 UTC
From: rick@cs.sunysb.edu
Message-ID: <26i5kj$edp@newsserv.cs.sunysb.edu>
Source record: 119597
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

T/TT Ted Johansson (ted@xio.ericsson.se) wrote:
: >>>: The other way is OK and actually no special programs are needed for this. The
: >>>: methods are described in books.
: >>>
: >>> Reference, please?

: I forgot, check Microwaves & RF, May 1993, p. 210. There is an article on the
: subject.

No, what my original posting sought was a program to take a set
of S parameters and crunch them into a linear, small signal
fet/bjt model - ie given the S params, gm, etc, produce a set of
component values that closely fit the measured parameters of
the transistor. SuperCompact can do this; I am looking for a lower
(ie freeware) alternative to SuperCompact. Getting spice to print
the h/s/z/y params for a specified circuit is something I already
know how to do ;-)

: /// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///
: /// ERICSSON COMPONENTS AB | S-164 81 KISTA, SWEDEN ///

Rick Spanbauer, SUNY/Stony Brook

585. DPSK Receivers -- HomebuiltDoes anyone out there in the ether know of a simple way to decode a

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 15:56:38 UTC
From: wardml@mars5.altair.wes.mot.com
Message-ID: <1993Sep7.155638.26826@schbbs.mot.com>
Source record: 119603

digital signal when Phase Shift Keyed ? The incoming bit rate is only 300 baud and the phase shift is 90 degrees (sine =1, cosine =0)

I already have the transmitter, I need to build a low cost, low component #, receiver

Any references to IC application notes would be appreciated too.

Matthew L. Ward

Keywords:

586. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 16:57:50 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep7.165750.16867@kocrsv01.delcoelect.com>
Source record: 119613
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <26gioo$5jb@hobbes.cc.uga.edu>, mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
> I *did* do *one* thing for the good of the hobby, though; I persuaded
> Digi-Key to carry the NE602. That's my one good deed for electronics...
>
>
> --
> :- Michael A. Covington, Associate Research Scientist : *****

Now, if we could only get them to stock "Dual Gate MOSFETs", like the ones that seem to appear in every mixer/oscillator circuit in the ARRL Handbook (& "Solid State Design for Radio Amateurs") but are fading into rare existance . . .
--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

587. 17Meters on Heath HW-8?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 17:18:17 UTC
From: GROVE@wsuvm1.csc.wsu.edu
Message-ID: <16C4290E9.GROVE@wsuvm1.csc.wsu.edu>
Source record: 119599

Does anyone have information on converting the Heath HW-8 to 17 meters? I've al
ready done the 30 meter mod, now want to continue. Can't afford Argonaut!

588. 17Meters on Heath HW-8?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 17:23:48 UTC
From: GROVE@wsuvm1.csc.wsu.edu
Message-ID: <16C429234.GROVE@wsuvm1.csc.wsu.edu>
Source record: 119600

Does anyone have info on modifying the HW-8 for use on 17 Meters?

589. 17 Meters for Heath HW-8?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 17:31:05 UTC
From: GROVE@wsuvm1.csc.wsu.edu
Message-ID: <16C4293E9.GROVE@wsuvm1.csc.wsu.edu>
Source record: 119601

Does anyone have info on modifying the Heath hw-8 for 17 meter use?

590. Re: Why are folded dipoles 300 ohms?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 17:54:18 UTC
From: glenne@sad.hp.com
Message-ID: <CCzwEJ.LEn@srgenprp.sr.hp.com>
Source record: 119519

Jeffrey R. Millar (millar@mervax.sanders.lockheed.com) wrote:
: We are trying to make an eight element repeater antenna for 447 MHz based on

: The problem is that folded dipoles present an impedance of 300 ohms at the
: feed point. The phasing harness just won't work with that load.

: Any helpful suggestions are welcome, thanks in advance

Jeff

Folded dipoles with two equal diameter elements in free space are 300 ohms but different diameters and spacings can be used to transform up or down from this nominal. This is very convenient in yagi design since a particular configuration can be found to match most yagis.

Additionally, the presence of reflectors or parasitic elements can affect (usually drop) the impedance. I'd suggest that you build a sample folded dipole with equal element diameters and mount it relative to the mast in the manner you desire. Then you can play with altering one of the elements diamter/width and spacing between the two until you get to 50 ohms. Hopefully there will be small enough mutual coupling with the other folded dipoles that the final impedance won't be greatly affected. If you have a vector network analyzer it's lots easier to tell what's going on.

See the ARRL antenna book for folded dipole/transformer information.

73

Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

591. Re: Do transmitters erase tapes?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 19:06:01 UTC
From: wgsmith@netcom.com
Message-ID: <wgsmithCCzzq1.3st@netcom.com>
Source record: 119604
Cross-posted to: sci.electronics,alt.radio.pirate,rec.radio.amateur.homebrew

In article <26boog$ki4@hobbes.cc.uga.edu> mcovingt@aisun3.ai.uga.edu (Michael Covington) writes:
>Query: Do low-power VHF transmitters erase videotapes or audio tapes?
>
>I have a Ramsey FM-10 putting out a few milliwatts to relay my stereo
>throughout the house. Do I need to keep videotapes away from it?
No problem. It takes a very strong *low freq.* (or static) magnetic field
to erase tapes. Even high-powered broadcast xmtrs. will not do it.

--
==========
William Goldsmith wgsmith@netcom.com
KPIG (408)722-9000 Fax (408)722-7548 V-mail (408)842-6737
==========

592. Sources of blank PC boards

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 20:20:39 UTC
From: wa2sff@cbnewsh.cb.att.com
Message-ID: <CD036K.EuL@cbnewsh.cb.att.com>
Source record: 119608

I am ready to etch a board for a RF project I have
designed and I need a source of blank PC boards.
Radio Shack has one double sided board.
I need a 6x6" single sided board.
Anyone have any sources? Mail order is fine.

Joe Wilkes
j.e.wilkes@att.com

593. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 20:28:33 UTC
From: jeh@cmkrnl.com
Message-ID: <1993Sep7.132833.2680@cmkrnl.com>
Source record: 119607
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Sep7.133755.14355@cs.aukuni.ac.nz>, pgut1@cs.aukuni.ac.nz (Peter Gutmann) writes:
> In <trimmCCyJA6.1tv@netcom.com> trimm@netcom.com (Trimm Industries) writes:
>
>>The kit I've been waiting for is the Comprimising EMI Exploitation Kit,
>>which is often called Van Eck Phreaking. It's a box of maybe $75 worth
>>of stuff that allows you to point an antenna at someone's CRT and
>>duplicate their screen on your _own_ CRT. This is why Tempest and its
>>predecessors were adopted by DoD. Dr. William Van Eck of PTT Netherlands
>>demonstrated the device on a (PBS?) documentary, heck, it must be almost
>>ten years ago. I have a crude scematic of such a device, but it looks
>>like too much of a kludge for me to build, and I'm not an analog guy, so
>>if it didn't work I might have a bit of a time with it.
>
> Reading the start of this thread I was going to post a message on exactly
> this subject. I'd really like to get my hands on a device for doing this,
> but it involves (shudder) analog circuit design which isn't really my field
> (if you can't debug it with a logic analyzer I don't want to know about it
> :-). Having it available from some sort of reputable source would be nice -
> I've seen a few advertised in the same place as antigravity devices and time
> machines which doesn't really inspire any confidence.

Elektor, the British equivalent of the old _Popular Electronics_ (except that _Elektor_ kept going while PE -- not to be confused with the pulp-paper PE that used to be _Hands-On Electronics_ -- died), had a construction article for one of these.

Keep in mind that if you point the antenna for one of these at an office building full of CRT terminals (some running at different sweep rates from others, and none sync'd with any of the others) you won't be able to pick up much. I've no doubt that the CIA, Mafia, and other similar organizations :-), have systems that address this.

I've heard from a reliable source of a demo where folks in a van, 100' or more from an office building, showed that they could sync up on the noise radiated by the EIA-232 connection to a particular serial printer (out of several dozen in the building, and several in the same room), and produce a copy of what the printer was printing, with only occasional errors! (Not bad, considering that we sometimes have trouble doing that well with hardwired links!) A company just a few miles from here builds some of the receivers and discriminators that allow this...

--- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

594. 311-A/B vaccuum tube info wanted.please?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 20:33:48 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep7.203348.15541@cyphyn.UUCP>
Source record: 119611

I need the filament voltage, current rating for the antique tube, so to get
it into a working 1 tube receiver.
--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

595. Re: Program, convert from S params -> Spice mode

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 20:57:09 UTC
From: lovelace@adcae1.comm.mot.com
Message-ID: <1993Sep7.205709.1528@newsgate.sps.mot.com>
Source record: 119605

>In article 1tk@newsserv.cs.sunysb.edu, rick@cs.sunysb.edu (Rick Spanbauer) writes:
>Does anyone happen to have a pointer to a PD program that will take
>a set of S parameters and crunch them backwards into a Spice
>compatible model? Ideally, I would like to get something that
>will produce models for both BJTs and the various types of FETs.
>I have read that Compact Software's SuperCompact can produce
>such models, but for casual tinkering, I am sure the price is
>way of of my league :-)
>
>Alternatively, I would appreciate any pointers to literature that
>would describe the search algorithms for constructing such models
>from S params.
>
> Thanks - Rick Spanbauer, SUNY/Stony Brook

Not possibe with only S-Parameters. You will need DC data fitted as well. The general technique is to fit the DC SPICE model parameters, lock these parameters down then fit the AC SPICE model parameters to the S-Parameters. There are some very expensive software packages that can do this such as HP's High Frequency IC-CAP and possibly Silvaco's UTMOST. Otherwise we have been able to use HP's product as well as another alternative of using HSPICE (optimize in the DC then the AC). I highly recommend HSPICE over PSPICE any day, especially since it has a non-linear optimizer and a two-port network. The PC version of HSPICE costs about $3K. A paper describing how we have been able to extract MOSFET models using HSPICE can give you come additional insight. It's title is: "Modeling a New Generation of RF Devices: MOSFETs for L-Band Applications" which was presented at the 1993 IEEE MTT Symposium.

David Lovelace
motorola semiconductor products sector
advanced custom technologies
silicon rf development group
602-898-5401
lovelace@fig.sps.mot.com

596. Re: Why are folded dipoles 300 ohms?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 21:54:55 UTC
From: aj@sage.cc.purdue.edu
Message-ID: <aj.747438895@sage.cc.purdue.edu>
Source record: 119606

Could it be that the system was designed to work with an >array of arrays<? if I recall correctly, a 50-ohm feed can feed 4-300 ohm dipoles, but I don't know what connections were necessary to do the trick. I think the 50-ohm line was run straight, with the 300-ohm dipoles put across its conductors in parallel at 1/2 wave distances.

It's been a while, but this was for a commercial 400MHz band repeater antenna. It supposedly worked okay.

So, this means you may have a 50-ohm harness with 4 taps, which turns into 16 actual antennas. What a phasing nightmare!

: John Dormer
: aj@sage.cc.purdue.edu

597. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 23:45:12 UTC
From: sorgatz@avatar.tti.com
Message-ID: <1993Sep7.234512.17184@ttinews.tti.com>
Source record: 119612
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

I'd like to see a kit for a 6/2 meter all mode portable. It might be two units,or have the ability to be constructed for either band, adding the other at a later date. Full coverage, synthesized - maybe using thumbwheels. At least 5w output and both fm and ssb as well as cw...maybe am too. (?) Something that you could do the pc board stuff & solder, test easily and maybe even sew a kit canvas/leather carrying case for!

I'd also like to see a kit for an inexpensive 6m linear amp...something in the 10w in/150w out range...transistors with toroidal matching and a receive preamp using a GasFet...for under $200US...or maybe a 1 tube linear for 6m..10w in for 2-300w out...maybe based on a 4cx250b...for under $300US.

Kit makers are you listening?

73!

-Avatar-> (aka: Erik K. Sorgatz) KB6LUY +----------------------------+
TTI(es@soldev.tti.com)or: sorgatz@avatar.tti.com *Government produces NOTHING!*
3100 Ocean Park Blvd. Santa Monica, CA 90405 +----------------------------+
(OPINIONS EXPRESSED DO NOT REFLECT THE VIEWS OF CITICORP OR ITS MANAGEMENT!)

598. Re: Frequency interval

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-07 23:49:33 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep7.234933.587@cyphyn.UUCP>
Source record: 119610

9203117@rkw-lan.cs.up.ac.za (WESSELS T) writes:
: Is there some way of changing the frequency receiving interval on a FM
: receiver. I have electronic knowledge and would appreciate references or
: direct instructions.

Freq rec interval? do you mean the freq steps like 200kc , that it 'hops'?

If so...thats all in the cpu that controls the set...all in Prom...thus, you'd need build an outboard local oscillator, pll it and control it by - probably your computer (easier to do) to make freq resolution finer.

In essence you need an osc that will tune from 77mc to 99 mc (I assume we are talking about 88-108 fm?)
Using an osc running at 1/3 the freq, it'll be in range of cheap plls with a 5kc step rate (this boils down now to a 15kc step rate when done)
You multiply the freq to get that 77-99mc, for the HFO.

You are really going to need a couple books on pll's and how superhets work, and sence there are SO amny...may I recommend ARRL Handbook?---1988 -1993 will do (all ahve more or less same thing)... that'll get you started.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
DON'T JUMP! -Peter Keyes
You might break an expensive tube!

599. Re: 311-A/B vaccuum tube info wanted.please?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 04:05:42 UTC
From: floyd@sanford.ims.alaska.edu
Message-ID: <1993Sep8.040542.10381@raven.alaska.edu>
Source record: 119615

In article <1993Sep7.203348.15541@cyphyn.UUCP> randy@cyphyn.UUCP (Randy) writes:
>I need the filament voltage, current rating for the antique tube, so to get
>it into a working 1 tube receiver.

The 311 is a Western Electric tube, and probably has a 24 volt filament.

At one time any toll office (long distance Toll Center) would have had
dozens of them in the carrier systems and I think they were also used
as the control amplifier in some of the battery plant rectifiers.

But, alas... I looked in all the dark corners today at work and I can't
find one dusty old scrap of info on a 311 anymore! I know that as recent
as two years ago we had some old tube manuals hidden away, and maybe it
was only about 3-4 years ago that the last piece of junk^H^H^H^H equipment
using them got turned off.

The 310 and the 311 were both used in "L" carrier systems, but I can't
remember which tube is which. I think both of them had 24 volt filaments,
but were commonly operated at 12 volts in WECO equipment. The result was
that they just didn't ever fail! I know positively that I saw some that
had not been changed in 25 years.

I would suggest that looking in a fair sized library might turn up some
information...

--
floyd@ims.alaska.edu A guest on the Institute of Marine Science computer
Salcha, Alaska system at the University of Alaska at Fairbanks.

600. Re: Why are folded dipoles 300 ohms?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 04:55:13 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep8.045513.27271@ke4zv.atl.ga.us>
Source record: 119609

In article <millar.44.0@mervax.sanders.lockheed.com> millar@mervax.sanders.lockheed.com (Jeffrey R. Millar) writes:
>We are trying to make an eight element repeater antenna for 447 MHz based on
>a Cushcraft phasing harness we found surplus. We have just the harness and
>not the antennas or mounting hardware.
>
>Analysis of the phasing harness shows that each of the antennas needs to
>present 50 ohms for the total to look like 50 ohms for the whole array. We
>confirmed this with by placing 8 47-50 ohm 1/4 watt film resistors on the
>antenna connection points and looking at the reflected power. The harness
>exhibited a beautiful match at 440 MHz.
>
>Looking at existing antennas of similar design, we note that each of the
>elements appears to be a folded dipole. We couldn't find any matching
>components.
>
>The problem is that folded dipoles present an impedance of 300 ohms at the
>feed point. The phasing harness just won't work with that load.
>
>Any helpful suggestions are welcome, thanks in advance

Jeff, the Cushcraft 4 Pole antenna uses gamma matched dipoles as
elements, not the folded dipoles used by DB Products. This antenna
is a horrible kludge. We installed one at our repeater. It's performance
was bad, so we added a second 4 Pole below it and phased them together.
That was better, but our coverage was still poor. Finally we bought a
Comet 440 repeater antenna and our problems were solved. Best $120
we ever spent.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

601. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 13:55:18 UTC
From: bwhite@cobra.camb.inmet.com
Message-ID: <CD1G07.Fyx@inmet.camb.inmet.com>
Source record: 119616
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

>Now, if we could only get them to stock "Dual Gate MOSFETs", like the
>ones that seem to appear in every mixer/oscillator circuit in the ARRL
>Handbook (& "Solid State Design for Radio Amateurs") but are fading
>into rare existance . . .

I asked my wife about this last night. She's a EE and an electronics
manufacturing engineer, though analog and RF electronics is not her
specialty. (She thinks I'm a lunatic for futzing around with discrete,
through-hole parts. She doesn't understand how anybody could even
think of doing something other than surface mount technology with
big machines and parts on reels.) She pointed out to me: If people used
to use these, then they were solving a problem. Either the problem
has gone away, or they solve it with other parts now. "They" means
grown-ups in this case. So, what do grown-ups do for mixers and
oscillators? Do they use synthesized oscillators using PLLs on chips?
Mouser and Digi-Key have PLL chips for small funds (under $3.00).
Do they use Mini-Circuits mixers?

Danny's Small Parts and Kits still sells dual gate mosfets, and he
advertises them as replacements for 40673s, which have been put out
of their misery by RCA. I just got his latest flier last night.
It's very exciting, but then, my wife is probably right, and I'm
a lunatic. Digi-Key and Mouser advertise NTE222s, which
NTE claims as a substitute for the 40673. I don't know if they
actually stock these, but they are in the catalog. They cost
about $3.90 per each.

Hope this helps.

Peace
Bill White, N1OSA

602. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 14:44:58 UTC
From: rick@cs.sunysb.edu
Message-ID: <26kr5a$r8o@newsserv.cs.sunysb.edu>
Source record: 119617
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Bill White (bwhite@cobra.camb.inmet.com) wrote:
: >Now, if we could only get them to stock "Dual Gate MOSFETs", like the
: >ones that seem to appear in every mixer/oscillator circuit in the ARRL
: >Handbook (& "Solid State Design for Radio Amateurs") but are fading
: >into rare existance . . .

[text deleted]

: She pointed out to me: If people used
: to use these, then they were solving a problem. Either the problem
: has gone away, or they solve it with other parts now. "They" means
: grown-ups in this case. So, what do grown-ups do for mixers and
: oscillators?

Dual gate mosfets are still used in television tuners;
one typically uses the second gate to achieve AGC. I think it
was a recent RF design which mentioned one manufacturer which
introduced a dual gate mosfet for use in RF apps, ie AGC amps.
The original poster might do well to take a look through the
Phillips RF discrete semiconductor catalog for dual gate fets.

: Bill White, N1OSA

Rick Spanbauer
SUNY/Stony Brook

603. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 15:37:10 UTC
From: DOUG@HDQCMS2H.UTSD.ATT.COM
Message-ID: <16C43A366.DOUG@HDQCMS2H.UTSD.ATT.COM>
Source record: 119521

I'd like to see a SIMPLE CHEAP EASY-TO-BUILD kit for a transceiver
for satellite use. I would like to propose, and I would be interested
in seeing any of the following:

1 - a simple mode A transceiver (as used for RS-10)
It would consist of two parts:
10 meters downlink receiver (in the 29.4 Mhz range)
2 meters uplink transmitter (in the 145.?? Mhz range)

Should do SSB and CW. 2 meter output should be adjustable with
high power in the 15 watt range. Note that both the transmitter
and the receiver only need to cover about 50-100 khz of each band
because the transponder on the satellite is only about that wide.
Should be able to run off 12 volts. Note that a 5khz switch on the
transmitter is not acceptable. A much finer resolution is necessary
because the common practice on RS-10 is to vary your transmitted
signal to compensate for the doppler shift. It doesn't need a digital
readout (an marked dial is fine). It doesn't need an S-meter either.
Keep it as simple (and cheap) as possible. Nothing excessively fancy.

2 - a simple mode B transceiver (as used on AO-13). Same as above,
but for mode B (70cm / 2m). Adjustable output power. CW/SSB.
Runs off 12 volts. 20 watts output should do it.

3 - a simple transceiver for AO-21's FM transponder. AO-21 uses an FM
transponder. This kit would have an FM transmitter for 435.015
and a two meter receiver for 145.985. The receiver should be able
to compensate for the doppler shift (so 145.990 - 145.980 should do).
Crystal control for the transmitter would be ok. Only needs to do FM,
(CW and SSB not used on AO-21). I think 20-30 watts output should
suffice.

Douglas Quagliana KA2UPW
Please send replies to dquagliana@attmail.com

604. Program, convert from S params -> Spice mode

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 15:58:48 UTC
From: jangus@skyld.tele.com
Message-ID: <747503928snx@skyld.tele.com>
Source record: 119518

In article <1993Sep7.205709.1528@newsgate.sps.mot.com> lovelace@adcae1.comm.mot.com writes:

> >In article 1tk@newsserv.cs.sunysb.edu, rick@cs.sunysb.edu (Rick Spanbauer) > writes:
> >Does anyone happen to have a pointer to a PD program that will take

> The PC version of HSPICE costs about $3K.

Of course it costs $3K, thats so the required effort to make it work was initially put into it. But HAMs are a funny bunch, since we are "using" it for personal purposes (oops, I'm sorry, "Emergency Preparedness") it should be made available for free.

I know, how about it HP released a version with no screen output. Just good old Morse on the PC speaker. Then everyone could be happy. HP could justify sending it out as PD software considering that anyone who would copy CW at (insert fave rate here) for several pages of analysis deserved it. And of course the Morris forever types would be vindicated with their proof that again, you could always get the engineering job done if all you had left were just the leads to the keyboard.

Are there really those of you out there that will require the smiley face to indicate the content of this posting? Sorry, you're not getting one.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

605. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 17:32:24 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep8.173224.14748@kocrsv01.delcoelect.com>
Source record: 119524
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <CD1G07.Fyx@inmet.camb.inmet.com>, bwhite@cobra.camb.inmet.com (Bill White) writes:

> grown-ups in this case. So, what do grown-ups do for mixers and
> oscillators? Do they use synthesized oscillators using PLLs on chips?
> Mouser and Digi-Key have PLL chips for small funds (under $3.00).
> Do they use Mini-Circuits mixers?
>

I think the "solution" that the "grown-ups" have found is the NE602. Fine chip (from what I've read) but there are a lot of circuits designed around the infamous 40673. I'm not sure what the pros/cons ALL are between the two (i.e. total $$ in "glue" parts to build an mixer, PCB area, IMF distortion, gain, etc.), so I don't know if one is neccessarily "better" than the other. It would be nice if Doug DeMaw would do a side-by-side comparison of a mixer circuit using the NE602 and the 40673 to tell us whether or not we should bother to "linger on" with our apparant love of the 40673.

> Danny's Small Parts and Kits still sells dual gate mosfets, and he
> advertises them as replacements for 40673s, which have been put out
> of their misery by RCA. I just got his latest flier last night.
> It's very exciting, but then, my wife is probably right, and I'm
> a lunatic. Digi-Key and Mouser advertise NTE222s, which
> NTE claims as a substitute for the 40673. I don't know if they
> actually stock these, but they are in the catalog. They cost
> about $3.90 per each.
>
> Hope this helps.
>
> Peace
> Bill White, N1OSA

Thanx for the info . . . perhaps I should buy a few before the price hits the $10ea mark (they used to be under $1 as I recall).

--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

606. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 17:34:54 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep8.173454.14848@kocrsv01.delcoelect.com>
Source record: 119525
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <CD1G07.Fyx@inmet.camb.inmet.com>, bwhite@cobra.camb.inmet.com (Bill White) writes:
> grown-ups in this case. So, what do grown-ups do for mixers and
> oscillators? Do they use synthesized oscillators using PLLs on chips?
> Mouser and Digi-Key have PLL chips for small funds (under $3.00).
> Do they use Mini-Circuits mixers?
>
> Danny's Small Parts and Kits still sells dual gate mosfets, and he
> advertises them as replacements for 40673s, which have been put out
> of their misery by RCA. I just got his latest flier last night.
> It's very exciting, but then, my wife is probably right, and I'm
> a lunatic. Digi-Key and Mouser advertise NTE222s, which
> NTE claims as a substitute for the 40673. I don't know if they
> actually stock these, but they are in the catalog. They cost
> about $3.90 per each.
>

By the way . . .

Does anyone out there have a SPICE model for a dual-gate MOSFET like the 40673? How about for the NE602 IC? I'd be interested in making a pair of "models" of mixer circuits using both and seeing what performance differences there are, and how each might be "optimized".
--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

607. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 20:15:39 UTC
From: randolph@est.enet.dec.com
Message-ID: <CD1v9v.65s@ryn.mro4.dec.com>
Source record: 119520
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

In article <1993Sep6.185728.13433@ericsson.se>, ted@xio.ericsson.se (T/TT Ted Johansson) writes...
>In article <26fg95$1tk@newsserv.cs.sunysb.edu> rick@cs.sunysb.edu (Rick Spanbauer) writes:
>>Does anyone happen to have a pointer to a PD program that will take
>>a set of S parameters and crunch them backwards into a Spice
>>compatible model?
>
>Principally, this is not possible, since SPICE-models for MOS och BJT
>are large-signal models and the s-parameters describe the small-signal
>behaviour in a working point. Of course, it is possible to extract a
>small-signal only model for SPICE, but what's the point?

Wow, something I can comment on...
We do some of this type of thing on the BJTs and FETs that make up our ICs. Mostly DC only, however we're doing some feasibility tests on getting AC parameters from measured S-parameters.
Few people know very much about this field. I can't claim to be one of them. It's mostly mumbo-jumbo as far as I can see. Much of it seems to involve tweeking a SPICE model, comparing it to measured curve traces, and iterating until they match. Often the final SPICE model will not even resemble the parameters as measured directly. I take this to mean that SPICE isn't necessarily a physical, "first priciples" model of what really happens inside a piece of silicon.
I'm trying to learn as much as I can about this, because it interests me, and could prove useful for radio circuits!
-Tom R. randolph@est.enet.dec.com

608. Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-08 22:17:47 UTC
From: walker@opus.hpl.hp.com
Message-ID: <40010001@opus.hpl.hp.com>
Source record: 119522

Many people lately seem to be having problems with wrist
injuries from using QWERTY keyboards.

It recently occurred to me that a keyboard might be
replaced with an iambic Morse keyer to reduce operator stress.

With a modern iambic keyer you can make all alphabetic characters,
except for 'p' and 'x', with a single squeeze of the thumb and index
finger. Speeds of 40 WPM are easily achieved with practice, which
equals my fastest touch typing rate.

Of course, there would need to be extensions made to Morse to send
upper/lower case, control, escape, and all punctuation symbols.

So here's how I've thought about implementing this: Start with a
single chip micro with a RS-232 port and program up an iambic keyer
with a lookup table. When the user sends a character, the RS-232 port
will echo the ASCII equivalent to the computer.

Alternatively, one could use a standard keyer circuit (Accukey or Curtis),
and simply program up a Morse decoder. Does anyone have any ideas for
algorithms for tracking the current dot/dash timing? You could remember
the shortest and longest beep in the last few beeps and set the dot/dash
timing threshold midway between, but there has to be more sophisticated
algorithms.

Any comments or suggestions?

--
Rick Walker, wb6gvi

609. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 05:49:42 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Sep9.054942.11654@mksol.dseg.ti.com>
Source record: 119526

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
: SOTA was a 120 degree LNA feeding low loss cable to a single conversion
: receiver with a 70 MHz IF and FM detector. Few people still use anything
: so crude. Most systems now use a 15 to 30 degree LNB at the feedpoint

Forgive my ignorance but... 120,15,30 degree? Do you mean beamwidth or
Noise temperature or something else?

: a tunable stage to convert down to the 70 MHz IF and FM detector. A 6
: foot dish with offset feed is pretty much standard now instead of the

offset feed?

: C band satellites. If you also want Ku band, you need a dish with a finer
: surface finish than most of the fiberglass over chicken wire models being
: sold. A spun aluminum dish is a better choice in this case. You use the

Since I'm literally only interested in 1 channel do you think the old LNA/
single conversion receiver would be sufficient? NASA select is C band.
Since it sounds obsolete maybe I can get a deal on a dish/LNA combo.
I'd like to keep the dish small though, since it'll probably
have to sit on the roof to see low enough south. Whats the typical
noise figure for the old LNA systems? Maybe I can do better with
a narrow band LNA with a good enough noise figure to keep the
dish small.?. Did they ever make small C band dishes/feeds?
Art.

610. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 09:41:39 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep9.094139.12205@cyphyn.UUCP>
Source record: 119523
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

rick@cs.sunysb.edu (Rick Spanbauer) writes:
: Bill White (bwhite@cobra.camb.inmet.com) wrote:
: : >Now, if we could only get them to stock "Dual Gate MOSFETs", like the
:
: [text deleted]
:
: : She pointed out to me: If people used
:
: Dual gate mosfets are still used in television tuners;
: The original poster might do well to take a look through the
: Phillips RF discrete semiconductor catalog for dual gate fets.
:
: : Bill White, N1OSA
: and...
: Rick Spanbauer
: SUNY/Stony Brook

I hope I did this right....

As soon as one tracks down a Dual gate fet.....poof! no longer in
stock!
Now we need to get PAL programmers just to whip up a 7400?

SMD vs thru hole mtg? wait till she hears I still do point-to-point
wiring....!

Is this REALLY progress? SMD and use of PAL chips...well, thats good
for mass production...
What REAL good is it for the one-of-a-kind builder/ homebrewer?
Sure...for UHF and all like that, one has no choice but to go that way...
But, for HF ?
Oh...
By the way...Thanks for getting them to restock NE602's ... I was
getting all set to make an Rx and when they didn't appear in the next
catalog, I was ready to go back to tubes! (for which there ARE many in
stock at Antique Electronic Supply...)
Your effort is appreciated.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

611. Spare parts to an old oscilloscope

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 13:08:45 UTC
From: Christer.Lundberg@te.hik.se
Message-ID: <CD38IM.ADo@tintin.hik.se>
Source record: 119468

Spare parts to oscilloscope DUMONT 1100P

I have a rather old oscilloscope from 1977, that
has been functioning quite well for all these years
but now suddenly has thrown in the towel. Is there
anybody who knows if there is still a chance to
buy the spare parts to it. It is made by
DUMONT OSCILLOSCOPE LABORATORIES INC
40 Fairfield Place, West Caldwell, N.J. 07006

I did try out reaching them by phone, but the
company was not there. When they left and where
to I don't know. Can anybody help me with
information ???
Email:Christer.Lundberg@te.hik.se
(Christer Lundberg, Kalmar, Sweden)

612. RAMSEY 2m/6m mods

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 15:13:29 UTC
From: rich@mulvey.com
Message-ID: <930909.111329.2d6.rusnews.w165w@mulvey.com>
Source record: 119531

Hello!

A few months ago, I remember seeing some messages posted to the .amateur groups by people who had difficulties with the spectral purity of the Ramsey 2M and 6M transciever kits, along with some solutions.

Could those people please e-mail me, as one of the amateurs on a local BBS has the 6M kit, and would like some info about what those solutions were.

Thanks!

- Rich

--
Rich Mulvey Amateur Radio: N2VDS 787 Elmwood Terrace
rich@mulvey.com Rochester, NY 14620

613. Projects needed

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 16:02:25 UTC
From: rschetge%arrl.org
Message-ID: <2216@arrl.org>
Source record: 119532

Here's your chance to find fame (among hams) and
fortune (small)! The list below shows projects that are
needed (in the next few months) for the 1995 ARRL Handbook.
If you have built a project that is similar to one of those
shown, please send me a note describing the project,
including its capabilities and any unusual or difficult to
obtain components. (I'm also interested in any *terrific*
projects that are not on the list.)
If we use the project, we will need you to send it to
ARRL HQ for a few weeks of evaluation, after which we will
return it to you. We pay shipping both ways.
Project suppliers are Contributing Editors. They will
be listed as such (the first year that the project appears)
and compensated at $65 per printed page. If you have a good
project but don't feel you can write the article, contact me
anyway. We might be able to get you a collaborator to do the
writing. Respond to me via email at:

rschetge@arrl.org

==========
Power Supplies & Projects
General case HV supply: capable of supplying B+ from 2000
to 3500 V, 1A, with current inrush protection.
NiCd charger with component values for several
current/voltage levels and quick-charge
temperature-based controls
Gel-cell charger
Solar array charger project
3-15V, 3A LM350 supply
13.8V, 5-7A supply
13.8V, 15/30A supply
13.8V, 20A REPRODUCIBLE switch-mode supply
28-40V, 10A experimenter's supply

Amplifiers & Projects
HF
50W linear transistor PA (3W in)
150W linear solid-state PA (20-50W in)
(1)3-500Z
(2)3-500Z
Legal-limit PA (including WARC bands)
High-power (KW) power combiner for HF
VHF/UHF
Dual-gate MOSFET preamp for 6m (w/ parts for 10m)

Dual-gate GaAsFET preamps for VHF and UHF
Discrete homebrew VHF/UHF bricks for 6m-440 at 10W and
100W levels.
Hybrid-module bricks (or updates) as alternatives. Show
performance/cost tradeoffs of discrete vs modules.

AC/RF Sources (Oscillators)
Crystal
Design example
LC (either air-variable cap or varactor diode control)
PLL (either full featured general-coverage or
single-band LO replacement)

Mixers, Modulation & Demodulation
SSB Modulators
Four-quadrant multiplier (CA3080)
FM
Indirect FM modulator
Quadrature detector (SBL-1 w/ 90 degree
phase-shift network or any commercial IF/detector
chip: NE/SA604N, MC3361)

Filters & Projects
SCAF
Audio filter for CW

Receivers, Transmitters, Transceivers & Projects
HF
Modular RX (new)
Simple monoband CW Xcvr (that can be built for any hf
band)
Single-band SSB Xcvr (3W+ output)
VHF/UHF
2-m WX-Cube-based RX (new)
Standard transverter/transceiver switching and
interface accessory
6-m/10-m transverter
144/10-m and 220/10-m transverters

Digital Signal Processing (An Advanced Technique) Theory and
Projects
DSP filter
Experimenter's DSP board for interface to PC, with
software tools (may be commercial offering)

Transmission Lines
Baluns/Ununs: Coiled coax, bead, toroid, air-core,
Microstrip to Coax in 1:1.5, 1:2, 1:6, 1:9, and
1:12 impedance ratios. Also 1:1.5, 1:2, 1:4, and
multimatch ununs;

Antennas & Projects
VHF/UHF beams (simple 4 el and 12-ft boom Yagis)
Portable twin-lead antenna

Station Set Up and Accessory Projects
8-pin to 4 pin mic connector
Voice keyer
Boom/headset mic with amp, variable frequency response
(building-block/cookbook approach)
Multimode TU/TNC/controller (homebrew equivalent to
present commercial offerings)
Multiple-input AF combiner (speaker mixer)
Reflectometer
Directional wattmeter
Antenna selector switch (Apr '93 _QST_)
Station interface box: provide switching between
several modems (RTTY, packet, cluster, etc) and HF
and VHF transceivers with simultaneous switching
of antennas in same unit.
DTMF decoder
Automatic ATU
Radio/computer interface

Specialized Communications Systems, Techniques & Projects
Simple VHF beam DF antenna

Circuit Construction
Temperature-controlled soldering iron

Test Procedures & Projects
DC/AC equipment
DMM
Capacitance meter
Inductance meter
ESD probe
DSP function generator
PROM programmer
RF equipment
Dummy loads
Signal injector/detector
RF probe (to 500 MHz)
RF meter
Deviation meter
Q meter
Noise bridge
PC-based scope
Field-Strength meter
Frequency counter (*not* LSI, based on simple chips,
should use presetable counters so it can be used
as display for superhet, show interface to TX or
RX)
Step attenuator

Dip meter

==========
Robert J. Schetgen, KU7G/1 American Radio Relay League
Assistant Technical Editor 225 Main St
Editor, ARRL Handbook Newington, CT 06111
ph: 203-666-1541 X277 email: rschetge@arrl.org

Robert J. Schetgen, KU7G/1 American Radio Relay League
Assistant Technical Editor 225 Main St
Editor, ARRL Handbook Newington, CT 06111
ph: 203-666-1541 X277 email: rschetge@arrl.org

614. Re: Program, convert from S params -> Spice

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 16:41:22 UTC
From: lovelace@adcae1.comm.mot.com
Message-ID: <1993Sep9.164122.28638@newsgate.sps.mot.com>
Source record: 119537

>Wow, something I can comment on...
>We do some of this type of thing on the BJTs and FETs that make up our ICs.
>Mostly DC only, however we're doing some feasibility tests on getting AC
>parameters from measured S-parameters.
>Few people know very much about this field. I can't claim to be one of them.
>It's mostly mumbo-jumbo as far as I can see. Much of it seems to involve
>tweeking a SPICE model, comparing it to measured curve traces, and iterating
>until they match. Often the final SPICE model will not even resemble the
>parameters as measured directly. I take this to mean that SPICE isn't
>necessarily a physical, "first priciples" model of what really happens inside a
>piece of silicon.
>I'm trying to learn as much as I can about this, because it interests me, and
>could prove useful for radio circuits!
>-Tom R. randolph@est.enet.dec.com

Yes, fitting the model is prefered. And we do that whenever we can, but there are
some parameters that have to bit optimized into place. I agree that most SPICE
large signal models are not true physical representations of a device and therefore
cannot truely model a device. DC parameters are necessary but certainly do not
work in describing the high frequency characteristics of a device without
some insight into the parameters that affect AC performance. Take for instance
the capacitor measurements that people often try to take with a low frequncy LCR
meter. This works ok for low frequencies, but if you try to use those measurements
for high frequencies, they will not work!

615. Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 16:58:12 UTC
From: jangus@skyld.tele.com
Message-ID: <747593892snx@skyld.tele.com>
Source record: 119534

In article <40010001@opus.hpl.hp.com> walker@opus.hpl.hp.com writes:

> It recently occurred to me that a keyboard might be
> replaced with an iambic Morse keyer to reduce operator stress.

> Of course, there would need to be extensions made to Morse to send
> upper/lower case, control, escape, and all punctuation symbols.

> Any comments or suggestions?

So, I guess BT could be used to clear the screen and SK would park the heads

Not the least of which, you would have to retrain wordperfect to realise that
'tt' means 'that' and so forth.

See accompanying comments in the P-Spice thread for Morse I/O on software.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

616. FM CW?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 17:27:11 UTC
From: swood@vela.acs.oakland.edu
Message-ID: <swood.747595389@vela.acs.oakland.edu>
Source record: 119533

Anyone know where I can get a good circuit design for running an audio tone on FM (144MHz) for morse code communications on my handheld.

My brother and I plan on using our HT's to communicate while hunting this fall, but will obviously want to keep talking to a minimum.

The unit will have to have some kind of a keyed audio oscillator, as well as a PTT operating T/R switch as well as some kind of side tone that can be switched (probably on the same T/R switch) between the incoming audio.

I am using a Yaesu HT (ft-23r) and my brother is using a Kenwood (th-27) which makes it more difficult due to the different pin-out designs on each radio's mike and speaker jacks.

thanks in advance for any replies.

swood

wq8b - 73 de scott
--
YEAH!!! Finally that time of year again - it's whackin` season!!!
Sept. 08 Opening day of early Michigan Elk seasons (permit only - see guide)
Sept. 10 Opening day of Michigan Bear season (permit only)
(Hope you got your permit applications in early...)

617. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 17:52:42 UTC
From: careyj@spot.Colorado.EDU
Message-ID: <careyj.747597162@spot.Colorado.EDU>
Source record: 119480
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

rick@cs.sunysb.edu (Rick Spanbauer) writes:

> No, what my original posting sought was a program to take a set
> of S parameters and crunch them into a linear, small signal
> fet/bjt model - ie given the S params, gm, etc, produce a set of
> component values that closely fit the measured parameters of
> the transistor. SuperCompact can do this; I am looking for a lower
> (ie freeware) alternative to SuperCompact. Getting spice to print
> the h/s/z/y params for a specified circuit is something I already
> know how to do ;-)

>: /// Ted Johansson, Dr.Tech. | eka.ekated@memo.ericsson.se ///

Well, I was hoping to learn a better technique, but this thread has been
around for a while with nobody commenting anything even this good.

Here's how I've done it for MESFETs operating at 5 GHz, when we had
the S-Params:

* First, convert the S-Params to Y params. This is a pretty
standard thing, and one reference for it is Gonzalez,
_Microwave_Transistor_Amplifier_Design_.

* The Y parameters give you a pretty good idea of what a simplified
FET transistor looks like. I.e., you can determine gm, Cgs,
Cds, Cgd, Rout. It ain't perfect by any means, but it seems
to work.

* "This excercise is left to the student," as my professors are fond
of saying. Seriously, it isn't that hard to figure out on your
own what the parameters map to; i.e. I think Re(Y21) maps to
gm, or something similar, Im (Y11) is probably Cgs, etc. If
there is enough interest I'll get my course notes and post
relevent details. I believe Motorola had some old transistor
application notes which talked about mapping BJT parameteters
to circuit parameters. It is not that hard to set up a mathcad
sheet to solve everything given the S-Params.

* My experience has been that these models are not very robust.
That is, don't trust them when you get very far from the frequency
at which you extracted the S-Parameters.

Thats all I know. I'll shut up now.

Joe Carey
careyj@spot.colorado.edu

618. Re: How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 18:39:34 UTC
From: rkarlqu@scd.hp.com
Message-ID: <26nt96$ea8@hpscit.sc.hp.com>
Source record: 119528
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

>: This is a guess, so take it for what it's worth: I think a vector
>: impedance meter is basically a 1-port vector network analyzer. It
>: measures the relative amplitude and phase of a signal going into the
>: device under test and calculates the impedance from that.
>
> I think it is fair to say that vector impedance meters are a special
>case of vector network analyzers. Perhaps it depends upon your
>context but I generally think of an impedance meter (vector is implied)
>as a low frequency case of a vector network analyzer. What is
>
> The connections to the device are made by way of a transmission line
>or medium. These connections are in actuality always with some kind of
>distributed network (the connections) but at low frequencies they were

The above speculation is fairly wide of the mark when it comes to
how the HP "vector impedance meters" (4193 or the old 4815) actually
work. They do not use transmission lines and do not work at all like
a network analyzer, except the sampling down converter is leveraged from
the old 8410 network analyzer.

Instead, you have a toroidal current transformer with a 1-turn secondary
consisting of the probe tip. 2 sampling RF voltmeters measure the voltage
at the probe tip and the voltage on the primary of the current transformer.
The signal source power is servoed to maintain constant current and the
voltage is read out as impedance magnitude. There is also a phase detector
running at the audio IF frequency to read relative phase of voltage and current
of give impedance angle. Pretty amazing design using early 1960's technology.

There are some HP "RF impedance meters" (4191, 4192) which if fact are
1 port, 50 ohm network analyzers with firmware optimized for impedance
measurements. But the original posting asked about VECTOR impedance meters.

Rick Karlquist
HP Santa Clara Division R&D
rkarlqu@scd.hp.com

"I sit next to the guy who designed the 8410"

619. Re: How do Vector Impedance Meters Work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 19:55:10 UTC
From: glenne@sad.hp.com
Message-ID: <CD3rBz.7GE@srgenprp.sr.hp.com>
Source record: 119529
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Richard Karlquist (rkarlqu@scd.hp.com) wrote:

I wrote
: > I think it is fair to say that vector impedance meters are a special
: >case of vector network analyzers. Perhaps it depends upon your
: >context but I generally think of an impedance meter (vector is implied)
: >as a low frequency case of a vector network analyzer. What is
: >
: > The connections to the device are made by way of a transmission line
: >or medium. These connections are in actuality always with some kind of
: >distributed network (the connections) but at low frequencies they were

: The above speculation is fairly wide of the mark when it comes to
: how the HP "vector impedance meters" (4193 or the old 4815) actually
: work. They do not use transmission lines and do not work at all like
: a network analyzer, except the sampling down converter is leveraged from
: the old 8410 network analyzer.

My point was that connections to the DUT aren't ideal. The hardware
isn't perfect and there are parasitics associated with the attachment.
These imperfections and the connections themselves rapidly become
non-negligible as accuracy and frequency are increased.

That's why I included the mention of context. The label "vector
impedance meter" does fit some specific HP products. I was trying to
address what I thought the poster was asking.

: Instead, you have a toroidal current transformer with a 1-turn secondary
: consisting of the probe tip. 2 sampling RF voltmeters measure the voltage
: at the probe tip and the voltage on the primary of the current transformer.
: The signal source power is servoed to maintain constant current and the
: voltage is read out as impedance magnitude. There is also a phase detector
: running at the audio IF frequency to read relative phase of voltage and current
: of give impedance angle. Pretty amazing design using early 1960's technology.

It is pretty amazing. Simulating a current (or voltage) source accurately
over a wide frequency range at the point of measurement while
providing connections which don't perturb the measured data
significantly isn't easy.
I believe that this is the essential problem that S parameters were
invented to solve. Not only is it increasingly difficult to generate
wideband current and voltage sources but real world devices often don't
operate well when terminated that way. For example, active devices may
oscillate. Measuring a DUT in an environment closer to the application
environment and converting the results to other contexts when necessary

(Y,Z,T parameters etc) can help.

: There are some HP "RF impedance meters" (4191, 4192) which if fact are
: 1 port, 50 ohm network analyzers with firmware optimized for impedance
: measurements. But the original posting asked about VECTOR impedance meters.

Perhaps it's also of use to point out the difference between a measuring
system which includes a directional device to separate stimulus from response
and one which uses something of the "1 + Gamma" variety which looks at
the combined effect. I think that a grid dip meter would fall in the
latter category.

I took a general interpretation of the original post to be more
like "how do I make something to measure impedance ". Email with him
confirmed that he was interested in inexpensive ways to use lowcost
PLLs and personal computer capabiltiy to measure devices.

: Rick Karlquist
: HP Santa Clara Division R&D
: rkarlqu@scd.hp.com

: "I sit next to the guy who designed the 8410"

Glenn Elmore n6gn

"I was on, and sat in the middle of the design team for the 8510"

620. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 20:46:44 UTC
From: rkarlqu@scd.hp.com
Message-ID: <26o4nk$mah@hpscit.sc.hp.com>
Source record: 119530
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

>I think the "solution" that the "grown-ups" have found is the NE602.
>Fine chip (from what I've read) but there are a lot of circuits
>designed around the infamous 40673. I'm not sure what the pros/cons
>ALL are between the two (i.e. total $$ in "glue" parts to build an
>mixer, PCB area, IMF distortion, gain, etc.), so I don't know if one
>is neccessarily "better" than the other. It would be nice if Doug
>DeMaw would do a side-by-side comparison of a mixer circuit using the
>NE602 and the 40673 to tell us whether or not we should bother to
>"linger on" with our apparant love of the 40673.

Dual gate MOSFET's have a far better strong signal handling ability
than Gilbert-cell Multiplier type mixers, such as the NE602. The
NE602 is basically just a hot-rodded MC1496, which is at least as
old as the 40673. Dual gate MOSFET's also have better noise figure
than NE602 types of mixers. Another advantage of MOSFET's is that
amplifiers made with them have twice the reverse isolation of
bipolar amplifiers.

Phillips makes the BF980 and variants in a "stripline package"
and the equivalent BF990 and variants in a true surface mount
package. BTW, an easy way to get a single BF980 is to order it
as a replacement part from HP. They are used in various scopes.

Rick Karlquist
rkarlqu@scd.hp.com

621. Homebrew 2-m rig for packet?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 21:49:20 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Sep9.214920.17245@news.uiowa.edu>
Source record: 119535

I'm looking for schematics for a homebrew 2-m rig (FM, I guess) which I could use for local packet work. 2W or less is fine, as I'm not too far from a packet node (I think) and while VFO would be nice, crystal is also acceptible

-- any help? Comments from other people who have tried doing something similar? Recommendations that it might be easier to modify/look for something else to use? Anything is welcome!

Tnx es 73 de Doug N0Z??
03W 04D 03H 50M and counting...

--
__ /| | Douglas J Renze | Charter Member, Popular Front
\'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
=(___)= | drenze@isca.uiowa.edu |
U | Douglas-Renze@uiowa.edu | Evolution Now!

622. Re: 311-A/B vaccuum tube info wanted.please?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-09 22:37:06 UTC
From: randy@cyphyn.UUCP
Message-ID: <1993Sep9.223706.16061@cyphyn.UUCP>
Source record: 119536

Thanks for the info...here's what I've done so far:

Using a VOM I checked the fil. Shows very much like a 24A fil.... o.7 ohm
and a 24A wants 2.5 volts.

If this 311A didn't have the closed off ends of the Kathode, I could just
apply all the different standard voltages...1.25 1.4 2.0 2.5 2.8 5.0
6.3 etc etc......we can omit 1.4 2.0 2.8, as those are for the low current
filamentary tubes (1U4 1AH5 3S4 , #30 #31 #32 etc) ...leaving 2.5 5 6.3
volts.
I'd apply power and watch the heater and see if it glows the right
amount (orange)..... that then would be the proper volts.

BUT...I can't see the fil! They have it covered by a ceramic bead on the bottom
and somthing (?) over the top.

I'll have to get my tube tester back from where it's being borrowed, and 1st
start at 2.5 v .... using a 24A setup, and see how it conducts... if bad,
then try 5....then 6 then 12 then (grit my teeth) 24 ... until
I see the cathode itself glow dull red-orange (hard to see INSIDE as well)
or the tube indicates plate current...

The end result is to be, to use it like a 24A...a 1 tube regenerating
detector... like the 'Thrill Box' (it sure WOULD be if the earphones
had a short from coil to case!) of the 30's.

(Mean while, I'm making a 1 tube #26 transmitter...xtal controlled, good
for at least 100 mw ... I only await arrival of xtals and xtal socket)

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

623. Re: Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 02:06:23 UTC
From: walker@opus.hpl.hp.com
Message-ID: <40010002@opus.hpl.hp.com>
Source record: 119540

In rec.radio.amateur.homebrew, jangus@skyld.tele.com (Jeffrey D. Angus) writes:

> > Any comments or suggestions?
>
> So, I guess BT could be used to clear the screen and SK would park the heads

Well, without getting silly, you would need to make extensions for full
ascii.

Looking at Morse, there are 26 letters in a space of 30 possible four-symbol
characters. That leaves 4 characters up for grabs:

Binary: Morse: Ascii:

0 . e
1 - t
00 .. i
01 .- a
10 -. n
11 -- m
000 ... s
001 ..- u
010 .-. r
011 .-- w
100 -.. d
101 -.- k
110 --. g
111 --- o
0000 .... h
0001 ...- v
0010 ..-. f
0011 ..-- UNUSED
0100 .-.. l
0101 .-.- UNUSED
0110 .--. p
0111 .--- j
1000 -... b
1001 -..- p
1010 -.-. c
1011 -.-- y
1100 --.. z
1101 --.- q
1110 ---. UNUSED
1111 ---- UNUSED

Actually, in international Morse, the UNUSED characters above are defined
as various accented vowels, but for english usage, they are not needed.
We can use these for things like <ESC>, <BS>, <TAB>, <SHIFT>, etc.

Here's some special characters already internationally defined:

```
MORSE: ASCII:
----------- -----------

RK (.-.-.-) "."
GW (--..--) ","
HH (.......) "BACKSPACE" (error)
BT (-...-) "=" (double dash) - perhaps use this for carriage return
OS (---...) ":"
KR (-.-.-.) ";"
KK (-.--.-) "(" or ")"
DN (-..-.) "/"
AS (.-...) (wait) - perhaps use for "^S"
AR (.-.-.) (end of message) - perhaps use for "^D"
WG (.----.) "'"
```

Now add the hack that "C" prepended to any character is a control character:

```
CA (-.-..-) "^A"
CB (-.-.-...) "^B"
CB (-.-.-.-.) "^C"
CD (-.-.-..) "^D"
...
```

Now you just need to do is define the rest of the punctuation characters:

```
.!@#$%^&*()-_+={}[]\|'";:><,./?`~
```

These could be mapped to digraphs starting with ".-.-" for <punctuation>:

```
<punc>A (.-.-.-) .
<punc>B (.-.--...) !
<punc>C (.-.--.-.) @
<punc>D (.-.--..) #
...
```

What I'd really like to hear from this group, though, is good algorithms
for doing morse code detection in software... For instance, how do you
optimally track a changing WPM rate?

--
Rick Walker

624. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 03:26:09 UTC
From: roberts@unm.edu
Message-ID: <26os4h$6lg@triton.unm.edu>
Source record: 119539

In article <1993Sep9.054942.11654@mksol.dseg.ti.com>,
arthur blair <blair@mksol.dseg.ti.com> wrote:
>Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
>: SOTA was a 120 degree LNA feeding low loss cable to a single conversion
>: receiver with a 70 MHz IF and FM detector. Few people still use anything
>: so crude. Most systems now use a 15 to 30 degree LNB at the feedpoint
>
> Forgive my ignorance but... 120,15,30 degree? Do you mean beamwidth or
>Noise temperature or something else?

120 degree was the noise temperature rating of a Satellite Low Noise
Amplifier -- the older technology.

Newer technology uses LNB (Low noise block -- a amplifier and block converter
built into one component -- no need for a separate block converter like
what was used with the older stuff). 15 to 30 is also a noise figure --
same units as those used with the LNA (Kelvin I think). In satellite
terms, the lower noise figure you go, the better.

>Since I'm literally only interested in 1 channel do you think the old LNA/
>single conversion receiver would be sufficient? NASA select is C band.
>Since it sounds obsolete maybe I can get a deal on a dish/LNA combo.
>I'd like to keep the dish small though, since it'll probably
>have to sit on the roof to see low enough south. Whats the typical
>noise figure for the old LNA systems? Maybe I can do better with
>a narrow band LNA with a good enough noise figure to keep the
>dish small.?. Did they ever make small C band dishes/feeds?

NASA Select is indeed C-band -- Satcom F2R/13. Satcom F2R is a somewhat
weaker bird (when considered to the newer satellites Galaxy 4, Galaxy 7,
Galaxy 5, Satcom C3, Satcom C4...). Because of this, you will need a
larger dish and a better degree LNA (or LNB) to get a sparkle free
signal. If you have a 100 degree LNA, I'd recommend at least a 8
footer or so to get somewhat-sparkle-free pictures. If you go with
the newer technology (25 deg LNB) you can get sparkle free pictures
with a 6-7 foot dish. A smaller dish would really be giving you
a picture with sparklies (a higher noise temp LNA/LNB would also).

The plus is that you can get a dish/LNA older technology system
rather inexpensively -- but you'd have to put up with some sparklies.

Robert
roberts@triton.unm.edu

625. How do dippers really work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 03:37:11 UTC
From: drew@trl.oz.au
Message-ID: <drew.45.0@trl.oz.au>
Source record: 119541

The standard texts generally state that RF energy is "absorbed" or "sucked" from the dipper coil, thus producing the dipping phenomenon. But this does not explain why a higher Q circuit produces a deeper and sharper dip than a low Q one for the same degree of coupling- remember, energy is only absorbed by the loss, or resistive part of the circuit under test.

This is what I think actually happens; "When the field from the primary coil (i.e. the dipper) energises the 'passive' coil, it will, if the exciting frequency is at or near the resonant frequency of the passive circuit; set up its own field in opposition (or "antiphase")_to the primary field, which tends to lower the amplitude of oscillation in the primary circuit"

If the coupling is sufficiently tight, oscillation may actually cease.

Is this a reasonable explanation? Suggestions anyone?

73, Drew, VK3XU.

626. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 07:10:02 UTC
From: die@pig.UUCP
Message-ID: <1211@pig.UUCP>
Source record: 119544
Cross-posted to: rec.radio.amateur.homebrew,rec.video.satellite

In article <1993Sep9.054942.11654@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:

> Forgive my ignorance but... 120,15,30 degree? Do you mean beamwidth or
>Noise temperature or something else?

C band LNAs and LNBs are by tradition rated in terms of noise temperature in degrees Kelvin. For marketing reasons, Ku band LNB's are rated in terms of noise figure instead (I guess so the early ones wouldn't look so poor compared to C band).

>
>: foot dish with offset feed is pretty much standard now instead of the
>
> offset feed?

Offset feed dish antennas have the feed horn located at some other place than the mechanical focal center of the dish. A common configuration is to use a feed offset below the dish. This allows two things. First the feed is not blocking signal from the sky getting to any part of the dish, which makes for greater aparture efficiency (gain/size), particularly if the reflector is small relative to the size of the feed, LNB, and supports which is often true at Ku band. And second the feed horn is usually pointing upwards at cold sky around the edges of the dish rather than downwards at warm ground which makes the noise temperature of the antenna substantially lower which is very important with weak satellite signals. Other advantages are that the reflector is usually closer to vertical and less likely to collect snow, and that the feed supports and LNB are out of the beam which reduces sidelobes (both helping with noise temp and with pattern characteristics)

Offset feeds are almost universally used for the Ku band VSAT terminals that litter the roofs of commercial buildings these days, just look at your nearest Wallgrens or Sears for one or more examples (dozens on a strip mall). They are still quite rare for home TVRO installations which are primarily C band. This is because most Ku band offset feed antenna designs use very shallow dishes (high F/D) to avoid coma and allow the use of a more or less standard nearly parabolic shaped reflector and that kind of focal distance with a 6 or 8 foot reflector at C band is awkward and unwieldy looking.

> Since I'm literally only interested in 1 channel do you think the old LNA/
>single conversion receiver would be sufficient? NASA select is C band.

As I said in a private email message, your best bet is almost certainly one of the early non descrambler equiped block down conversion type receivers. LNA/single conversion stuff is certainly available but used block receivers without integrated descramblers are so cheap at hamfests ($25-$50) that it is really silly to try to use the first generation TVRO receiver technology. Much of the first generation stuff designed for home use was pretty terrible and drifts and distorts video, and to boot has significantly worse FM threshold than than good examples of the block conversion second generation which often have threshold extending demodulators (tracking filters).

If you were to build a receiver, you would do much better to work at the L band (950-1450) output of a LNB with TV tuner class technology than to try to build the image rejecting mixers required to get good noise performance at 4 ghz with single conversion. And while you can buy the whole 1st generation TVRO downconverter assembly used for next to nothing, it will have an unstable voltage tuned VCO for a first LO rather than the nearly xtal oscillator stablity DRO used in LNB's, and you will probably need to mount it outdoors near the antenna (because 4 ghz coax runs are either very expensive - heliax - or very short); outside near the antenna where stablity issues are even worse due to temperature changes.

And in addition, used LNBs in the 45-60 K range are $5-10 at hamfests whereas you will find most junk LNAs are more like 80-100 K. Brand new 25-30 K LNBs are a commodity item you can buy for $80-100 or less, 25-30 K LNAs are a special order commercial item that you are likely to have to pay $125 to $150 or more for and may have trouble finding.

>Since it sounds obsolete maybe I can get a deal on a dish/LNA combo.

It is very obselete, the switchover to LNBs in new home TVRO installations happened about 1983 or so. Thus anything you are likely to find is ten years old and probably pretty battered (rusted, corroded) by the weather (rain is pretty acid around here and antennas don't last).

The advent of scrambling in 1986 and the recent conversion of to the new VCII+/RS technology have left a lot of more modern block downconversion stuff orphaned. You are better off looking for that.

>I'd like to keep the dish small though, since it'll probably
>have to sit on the roof to see low enough south.

NASA select is on Satcom F2 at 72 West (almost exactly due south of me) - in Texas this will be southeast. Pays to work the spherical trig with a calculator or run one of the many programs that do this and get exact numbers for azimuth and elevation. You can then borrow a transit or theodelite and figure out exactly where the bird is relative to trees, houses and other obstructions (as you know, microwaves don't penatrate foliiage well so you need a clear view).

A trick that is possible at this time of year (near the equinox) is to use the sun to tell you where the satellites are and where you can

see them on your property. Around the first of October or late
September depending on your latitude (later the further north you are)
the sun lies directly behind the Clarke belt, and all you have to do is
figure out what time of day the sun is behind Satcom F2 and look out the
window to see what is in shadow and what in sunlight at that time. An
ephemeris program or the old standby Nautical Almanac at the local
library will give celestial longitudes for the sun versus time of day
and you will be close enough by using the time the sun is at 72 West.

With a 5-6 foot dish and a decent grade 25 K LNB you should be
able to see the NASA Select on F2 transponder 13 just about at or slightly
above FM threshold (a few sparklies - aka FM clicks). Some of the stronger
transponders will be nearly perfect, but unfortunately transponder 13 seems
slightly weaker (2 db or so) than the strong ones on F2.

> Whats the typical noise figure for the old LNA systems?

As I said earlier, old LNAs that you are likely to find run
around 80-100 K (that is the best that was possible in the early 80s)
(or a nf around 1.6 db). But upgrading one with a $5-$10 45 K LNB and
a mid 80s block conversion receiver (maybe $35) still costs under
$50 and will give much better performance.

But if you want the smallest dish possible, you will have to
use a $90 25 K LNB anyway (but you still could use that $35 receiver).

> Maybe I can do better with a narrow band LNA with a good enough noise figure
> to keep the dish small.?.

You could in theory build one, but unless you have very very
good parts available for free at work you will have real trouble
equaling a mass produced 25K LNB for $80. And the effort required will
be very large compared to that $80 (you would be working for Mexican
peasant wages or less). And of course you will need all the right test
equipment and microstrip fabrication facilities and so forth. I would
guess that with a 6 foot dish having a noise temp of around 40 K at your
elevation that anything you could gain from narrow band design would
make very little difference compared to the commercial <25 K unit.

You are the rf engineer and I just dabble (incompetantly to
boot) in software and digital hardware mostly, but my guess is that even
with narrow band matching you might only get down to 15-20 K and that
only with careful tweeking.

> Did they ever make small C band dishes/feeds?

Most certainly. The first VSAT (introduced by Equatorial
Communications in the early 80s), managed to pull 19.2kb data out of the
sky with dishes as small as 18 inches - these are still around
and can be identified by the distinctive waveguide splash feed they use.

The practical limit to dish size at C band is directivity these
days rather than G/T, since very low noise amplifiers exist. The problem

is that the FCC has mandated 2 degree spacing between satellites and
dishes much smaller than 6 feet don't supply enough directivity to
reject adjacent satellites.

>Art.

David I. Emery - N1PRE - Lexington Mass.
Former senior technical consultant (and currently unemployed drunken bum)
Internet: jjmhome!pig!die@transfer.stratus.com (preferred) or die@world.std.com
UUCP: ...uunet!stratus.com!jjmhome!pig!die Phone + fax: 1+(617)-863-9986

627. Software for Circuit Cellar Ink articles

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 09:48:44 UTC
From: frode@dxcern.cern.ch
Message-ID: <1993Sep10.094844.20383@dxcern.cern.ch>
Source record: 119538
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.radio.amateur.misc

I am looking for the software for an article that appeared in
the September Issue of the journal
Circuit Cellar Ink, The Computer Applications Journal.

The article is "Neural Network Basics" by Dwayne Phillips,
Sept. 1993, issue #38, p.36-43.
The software should be available on The Circuit Cellar BBS, but I
have no modem access and I am wondering if anybody knows if this
BBS is mirrored somewhere on an Internet machine?

Frode

****
* Frode Weierud Phone : 41 22 7674794 *
* CERN, SL Fax : 41 22 7823676 *
* CH-1211 Geneva 23 E-mail : frode@dxcern.cern.ch *
* Switzerland or weierud@cernvm.cern.ch *
****

628. How does Decibel Products VHF/UHF antenna work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 13:38:13 UTC
From: millar@nhqvax.sanders.lockheed.com
Message-ID: <millar.46.0@nhqvax.sanders.lockheed.com>
Source record: 119542

DB Products makes a folded dipole array for base and repeater use. I wonder how the matching network adapts the 300 folded dipole feed point impedance to a 50 ohm line? In the example my friend has for his 220 repeater, eight dipoles get combined. The phasing harness appears to work as follows:

- top two dipoles paralleled
- top pair and second pair paralleled
- top half paralleled with the bottom half.

I can't work out what coax impedances and combinations of quarter and half wave lines yield overall 50 input impedance.

Thanks in advance for your help...

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

629. Re: Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 15:11:01 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Sep10.151101.6402@news.uiowa.edu>
Source record: 119545

walker@opus.hpl.hp.com (Rick Walker) writes:

>In rec.radio.amateur.homebrew, jangus@skyld.tele.com (Jeffrey D. Angus) writes:

>> > Any comments or suggestions?
>>
>> So, I guess BT could be used to clear the screen and SK would park the heads

>Well, without getting silly, you would need to make extensions for full
>ascii.

>Looking at Morse, there are 26 letters in a space of 30 possible four-symbol
>characters. That leaves 4 characters up for grabs:

>Binary: Morse: Ascii:

>0 . e
>1 - t
>00 .. i
>01 .- a
>10 -. n
>11 -- m
>000 ... s
>001 ..- u
>010 .-. r
>011 .-- w
>100 -.. d
>101 -.- k
>110 --. g
>111 --- o
>0000 .... h
>0001 ...- v
>0010 ..-. f
>0011 ..-- UNUSED
>0100 .-.. l
>0101 .-.- UNUSED
>0110 .--. p
>0111 .--- j
>1000 -... b
>1001 -..- p
>1010 -.-. c
>1011 -.-- y
>1100 --.. z
>1101 --.- q
>1110 ---. UNUSED
>1111 ---- UNUSED

>Actually, in international Morse, the UNUSED characters above are defined
>as various accented vowels, but for english usage, they are not needed.
>We can use these for things like <ESC>, <BS>, <TAB>, <SHIFT>, etc.

>Here's some special characters already internationally defined:

> MORSE: ASCII:
> ----------- -----------

> RK (.-.-.-) "."
> GW (--..--) ","
> HH (.......) "BACKSPACE" (error)
> BT (-...-) "=" (double dash) - perhaps use this for carriage return
> OS (---...) ":"
> KR (-.-.-.) ";"
> KK (-.--.-) "(" or ")"
> DN (-..-.) "/"
> AS (.-...) (wait) - perhaps use for "^S"
> AR (.-.-.) (end of message) - perhaps use for "^D"
> WG (.----.) "'"

>Now add the hack that "C" prepended to any character is a control character:

> CA (-.-..-) "^A"
> CB (-.-.-...) "^B"
> CB (-.-.-.-.) "^C"
> CD (-.-.-..) "^D"
> ...

>Now you just need to do is define the rest of the punctuation characters:

> .!@#$%^&*()-_+={}[]\|'";:><,./?`~

>These could be mapped to digraphs starting with ".-.-" for <punctuation>:

> <punc>A (.-.-.-) .
> <punc>B (.-.--...) !
> <punc>C (.-.--.-.) @
> <punc>D (.-.--..) #
> ...

>What I'd really like to hear from this group, though, is good algorithms
>for doing morse code detection in software... For instance, how do you
>optimally track a changing WPM rate?

>--
>Rick Walker

I forsee some more possible problems: First, you need to design software
intelligent enough to figure out that a long pause is a space between words.
Second, some of the peculiar spacing rules. Ie, two spaces after a colon,
two spaces after a period at the end of a sentence. As for shift, well...
following the paradigm of prepending a C to a character for a control char
(eg, CC for Ctrl-C) we could do SA for shift-A, etc. Only problem I can
see would be if we wanted to use SK for something. Or we could also do

UA for "uppercase-A." Near as I can remember, no prosigns, etc. begin with dadadit.

Peace es 73 de Doug N0Z??
03W 04D 21H 11M and counting...

--
__ /| | Douglas J Renze | Charter Member, Popular Front
\'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
=(___)= | drenze@isca.uiowa.edu |
U | Douglas-Renze@uiowa.edu | Evolution Now!

630. Synch detectors in QEX?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 15:46:48 UTC
From: joer@ESD.3Com.COM
Message-ID: <joer.747676008@zen.DEV.3Com.COM>
Source record: 119546

Seems like someone posted about a synchronous detector
article in QEX, and I neglected to make a copy of the
post. Does anyone know what issue of QEX this article
can be found in?

thanks
Joe KC6TXU (jlr@netcom.com)

--

____
Joe L. Reda, KC6TXU * jlr@netcom.com * Campbell, CA * all opinions are mine
"Full separation of church & state . . not just a good idea, IT'S THE LAW!"
///

631. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 17:42:44 UTC
From: markz@ssc.com
Message-ID: <1993Sep10.174244.29847@ssc.com>
Source record: 119550
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Bill White (bwhite@cobra.camb.inmet.com) wrote:
: I asked my wife about this last night. She's a EE and an electronics
: manufacturing engineer, though analog and RF electronics is not her
: specialty. (She thinks I'm a lunatic for futzing around with discrete,
: through-hole parts. She doesn't understand how anybody could even
: think of doing something other than surface mount technology with
: big machines and parts on reels.) She pointed out to me: If people used
: to use these, then they were solving a problem. Either the problem
: has gone away, or they solve it with other parts now.

How about an entire industry going away. RF parts like dual gate
MOSFETS would be primarily used in consumer electronics and they
don't make enough of that in the USA (anymore) for the local suppliers to
bother making them.

Mark Zenier markz@ssc.wa.com markz@ssc.com

632. Modify Heathkit SB series for 160 meters & WARC bands ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 17:43:15 UTC
From: rossi@VFL.Paramax.COM
Message-ID: <1993Sep10.174315.22319@VFL.Paramax.COM>
Source record: 119548
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.equipment

I have an old Heathkit SB-400 sitting in my basement that works but I have little use for as is. The market for these seems to be limited.

I have always wanted to get on 160 meters and was thinking of putting this old transmitter to use by modifying it to cover 160 meters and/or one or more of the WARC bands.

The 2 bands that I am most interested in right now are 160 and 17 meters.

I have not worked out all of the gory details but I would think that for the most part all that the mod would require is:

- Change the HET OSC crystal and coil for 2 of the band positions.
Most likely 3.5 and the 14.0 MHz bands would be used.
- Change the DRIVER grid and plate coils/cap for these band positions.
- Adding additional inductance to the final tank for 160 and move the 14 MHz tank tap for 17 meters.
- Switch in additional tune and load capacitors for 160.
- Possibly increase inductance of the final plate choke for 160 meters.
(I hope I don't have to do this)

If this works I may want to consider expanding the mod for 30 and 12 meters too. Ultimately I was thinking along the lines of something like:

OLD BAND becomes NEW BAND
3.5 -----> 1.8
7.0 -----> 10.0
14.0 -----> 18.0
21.0 -----> 24.0
28.0 -----> 28.0 (same)
28.5 -----> 28.5 (same)
29.0 -----> 29.0 (same)
29.5 -----> 29.5 (same)

I have not gone through the details yet to make sure there will be no unwanted or undesirable new mixing products that may require additional traps/filters to be added and/or other side effects but hopefully they will be minimal.

All in all it seems like it should be a fairly easy to to get something that will cover these bands. I already have a receiver that will cover these bands.

Anyone ever done anything like this?

==========
Pete Rossi - WA3NNA rossi@vfl.paramax.COM

Unisys Corporation - Government Systems Group
Valley Forge Engineering Center - Paoli, Pennsylvania
==========

633. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 17:45:42 UTC
From: jmhill@duck.WPI.EDU
Message-ID: <26qeg6$brm@bigboote.WPI.EDU>
Source record: 119543
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Hi;
I have a few friends who say their 2 meter handy talkies have no VOX,
or auto transmit when you talk switch. Maybe a simple project that keys
a handheld when you talk would be helpful.
Jonathan/KA1WZN

634. Re: How does Decibel Products VHF/UHF antenna work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 18:07:50 UTC
From: aj@sage.cc.purdue.edu
Message-ID: <aj.747684470@sage.cc.purdue.edu>
Source record: 119547

millar@nhqvax.sanders.lockheed.com (Jeffrey R. Millar) writes:

> - top two dipoles paralleled
> - top pair and second pair paralleled
> - top half paralleled with the bottom half.

Each pair of things which are paralleled will give you an impedance of

1/((1/Xa)+(1/Xb)+...+(1/Xn)) ohms

which means that at each first branch, the impedance is

1/((1/300)+(1/300))
166.666 ohms

If you then parallel two of these, you get

1/((1/166.666)+(1/166.666))
83.333 ohms

And finally,

1/((1/83.333)+(1/83.333))
41.666 ohms

Obviously they've adjusted the dipoles to be slightly higher than 300 ohms impedace (you can do this; go look in an ARRL handbook) so they end up with 50 ohms at the final point in the harness. You can change the impedance of a folded dipole by messing with the diameters of the "inside" and "outside" halves of the fold, and their distances.

The evil part is making interconnections which are the proper impedance. 50 ohms is no trouble, 100 ohm cable does exist but I've only seen it in real life a couple times, 200 ohm stuff is probably open wire because of the change in required conductor sizes (or really BIG diameter coax), and 400 ohm is probably really weird, too. It isn't impossible, though.

The equation I used is the same one for parelleled resistances.

hope I helped!
: John Dormer
: aj@sage.cc.purdue.edu

635. Re: A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 18:33:08 UTC
From: clifto@indep1.UUCP
Message-ID: <2457@indep1.UUCP>
Source record: 119551

In article <1993Sep4.224755.7687@news.uiowa.edu> drenze@icaen.uiowa.edu (Douglas J Renze) writes:
>wondering...just *what* does a capacitor do???? Yes, I know that, "a capacitor

Although you suggested using email, I thought I'd post this anyway...

One of the very best things you can do is to try to find a copy of
"Inside Electronics" by Monroe Upton. (Out of print; ask the library.)
Not only will you understand how capacitors work, you'll learn a great deal
more. I learned more from that book than from ten years' study of
electronics.
--
+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

636. Re: How does Decibel Products VHF/UHF antenna work?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-10 22:17:26 UTC
From: millar@nhqvax.sanders.lockheed.com
Message-ID: <millar.3.0@nhqvax.sanders.lockheed.com>
Source record: 119549

In article <aj.747684470@sage.cc.purdue.edu> aj@sage.cc.purdue.edu
(John Dormer) writes:

>millar@nhqvax.sanders.lockheed.com (Jeffrey R. Millar) writes:

>> - top two dipoles paralleled
>> - top pair and second pair paralleled
>> - top half paralleled with the bottom half.

> Each pair of things which are paralleled will give you an impedance of

> 1/((1/Xa)+(1/Xb)+...+(1/Xn)) ohms

>which means that at each first branch, the impedance is

> 1/((1/300)+(1/300))
> 166.666 ohms

You probably meant to say 150 ohms...but I get the point

> If you then parallel two of these, you get

> 1/((1/166.666)+(1/166.666))
> 83.333 ohms

> And finally,

> 1/((1/83.333)+(1/83.333))
> 41.666 ohms

> Obviously they've adjusted the dipoles to be slightly higher than 300
>ohms impedace (you can do this; go look in an ARRL handbook) so they
>end up with 50 ohms at the final point in the harness. You can change the
>impedance of a folded dipole by messing with the diameters of the "inside"
>and "outside" halves of the fold, and their distances.

> The evil part is making interconnections which are the proper
>impedance. 50 ohms is no trouble, 100 ohm cable does exist but I've
>only seen it in real life a couple times, 200 ohm stuff is probably
>open wire because of the change in required conductor sizes (or really
>BIG diameter coax), and 400 ohm is probably really weird, too. It isn't
>impossible, though.

> The equation I used is the same one for parelleled resistances.

I understand the parallel impedance thing. My question really revolves
around the selection of coax impedances and lengths. Consider a 300 ohm
antenna fed with one half wavelength of 50 ohm coax. The impedance at the
coax end is 300 ohms with a lot of VSWR on the half wave coax.

The antenna stacking really needs more like 3 half waves but that still results in 300 ohms at the end.

If one placed 6 300 ohm antennas in parallel, each fed with any type coax with a length of a multiple of one half wavelength, then the input impedance becomes 50 ohms.

The problem comes from the fact that the DB products antenna consists of 8 stacked dipoles not 6. I haven't figured out a simple arrangement of 50 and 75 ohm coax in a stacking harness which results in a 50 ohm input impedance.

Another factor on my mind is bandwidth. Each of the matching coax transformers has a optimum frequency and exhibits mismatch off that frequency. In general, if the VSWR in the matching section is high, the bandwidth is low.

Given all these considerations, my question still stands...how does DB Products do it?

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

637. Re: Modify Heathkit SB series for 160 meters & WARC bands ?

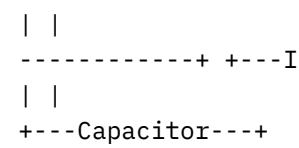
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-11 01:19:20 UTC
From: alanb@sr.hp.com
Message-ID: <CD6108.6u4@srgenprp.sr.hp.com>
Source record: 119553

Pete Rossi (rossi@VFL.Paramax.COM) wrote:
: I have an old Heathkit SB-400 sitting in my basement that works
..

: OLD BAND becomes NEW BAND
: 3.5 -----> 1.8
: 7.0 -----> 10.0
: 14.0 -----> 18.0
: 21.0 -----> 24.0
: 28.0 -----> 28.0 (same)
: 28.5 -----> 28.5 (same)
: 29.0 -----> 29.0 (same)
: 29.5 -----> 29.5 (same)

Sounds like you're on the right track. The plate choke may be a
problem -- You probably can't just increase the number of turns to
make it work on 160 because that might cause unwanted series resonances
on the higher bands (24-30 MHz).

One trick I have used is to use two chokes, with one in parallel with
a capacitor:



Inductor #2 is the original plate choke, and inductor #1 is new.
The capacitor parallel-resonates with inductor #1 in the 160 meter band.
There is a second series resonance between the capacitor and inductor #2
that should be placed between 160 and 80 meters. By using this
arrangement, you can control where the series resonance occurs,
and make sure it doesn't fall in a ham band.

AL N1AL

638. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-11 02:54:26 UTC
From: blair@mksol.dseg.ti.com
Message-ID: <1993Sep11.025426.1880@mksol.dseg.ti.com>
Source record: 119552

Great thread, eh?
Sounds like a used block converter is the way to go alright.
2 problems remain...
The antenna. What is the typical gain of a 6-7 foot dish? Do you think I could get by with a horn? Assuming I could keep the birds from nesting in it, it would be easier to mount on the chimney and less intrusive.
The IF output. Particularly demodulation. God but I dread the notion of buying a TV! It may sound silly (OK it probably does sound silly) but it's against my philosophy to even own one, much less turn it on. Are chips readily available to roll your own TV tuner? A single frequency unit ought to be simple enough. I dont want it to even LOOK like a TV.

By the way. It sounds like the LNB's are pretty much self contained. What are those control (?) boxes they sell with them that sit on the TV inside. If the LO is fixed frequency, what more is there to do but turn it on and off?

Does the IF bandwidth of the LNB occupy the entire UHF band?
Do LNB's usually come with the feedhorns attached?

If LNB's are so cheap why do new TVRO systems cost so much?
Where's the expensive part?
Art.

639. Re: Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-11 04:54:14 UTC
From: byon@beach.csulb.edu
Message-ID: <26rllm$lri@garuda.csulb.edu>
Source record: 119554

In article <1993Sep10.151101.6402@news.uiowa.edu>,
Douglas J Renze <drenze@icaen.uiowa.edu> wrote:
>walker@opus.hpl.hp.com (Rick Walker) writes:
>>Now add the hack that "C" prepended to any character is a control character:
>> CA (-.-..-) "^A"
>> ...

But then "^N" == ";"

>>These could be mapped to digraphs starting with ".-.-" for <punctuation>:
>> <punc>A (.-.-.-) .
>> <punc>B (.-.--...)

And <punc>A is "."

>>What I'd really like to hear from this group, though, is good algorithms
>>for doing morse code detection in software... For instance, how do you
>>optimally track a changing WPM rate?

See below.

>I forsee some more possible problems: First, you need to design software
>intelligent enough to figure out that a long pause is a space between words.
>Second, some of the peculiar spacing rules. Ie, two spaces after a colon,
>two spaces after a period at the end of a sentence. As for shift, well...
>following the paradigm of prepending a C to a character for a control char
>(eg, CC for Ctrl-C) we could do SA for shift-A, etc. Only problem I can
>see would be if we wanted to use SK for something. Or we could also do
>UA for "uppercase-A." Near as I can remember, no prosigns, etc. begin with
>dadadit.

except for "uppercase-A" being a ",".

>

In regards to the software, I put a lot of energy writing a morse-code
decoder algorithm to decode even the sloppiest of fists. It does a real
good job too. The hardware tone decoder is the biggest problem. But
with a trivial hardware set-up and this software, I was able to send
200 wpm code over 10 miles on VHF. Perfect copy on a slow 286. (it
was modulated CW actually).

I experimented with several designs for handling the changing WPM rate,
and settled on a rather simple scheme which only needed to keep track
on the length of the last mark. I'd be glad to go further into it.

What algorithms have others tried?

--
Byon Garrabrant KD6BCH byon@csulb.edu

640. Finding Motorola SMT in small quantity

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-11 16:58:36 UTC
From: rick@cs.sunysb.edu
Message-ID: <26t03s$716@newsserv.cs.sunysb.edu>
Source record: 119555
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,sci.electronics

Designing and building RF circuits is certainly a lot of fun, but it borders on the impossible to get modern parts in small quantity! Does anyone know of a source for small quantities of the Motorola MMBR901L (SMT version of the MRF901)? Active seems to carry some reasonable second choices to the MMBR901L, eg MMBR9411, but they say Moto will not let them break a rail to sell part in small quantity. Should I starting thinking Philips, Siemens, Mitsubishi (off shore) for RF parts, or is there a way to get Motorola in small quantities? I want to stay with SMT, since it is a bit of a drag to have to drill all the holes needed for through-hole when using home grown PCBs :-)

BTW, anyone know whether the 2N4416(A) is available in SMT?

Rick Spanbauer, WB2CFV
State U of NY/Stony Brook

641. NASA Select RX

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-11 20:13:35 UTC
From: kirk@arrl.org
Message-ID: <2233@arrl.org>
Source record: 119564

Greetings!

I don't know why you'd want to bother with building a sat RX-- you
can go to your local Sat dealer and buy on old, obsolete one for
$10-$20.

For one channel (or one satellite) they'll work fine.

Old LNAs, LNBs, etc, and give-away cheap. So are old 10-foot
dishes.

I build lots'a stuff, but old sat hardware is often free, so I
wouldn't bother.

Try this classified and you'll be sure to get an entire system:

RADIO EXPERIMENTER seeking hardware will remove that unsightly satellite
dish and equipment from your property FREE! Call....

It works!

--Kirk, NT0Z

==
Kirk Kleinschmidt, NT0Z | Tel 203-666-1541 9-5 EST
QST Assistant Managing Editor | Fax 203-665-7531 24 hrs
ARRL HQ, 225 Main St, Newington, CT 06111 | BBS 203-666-0578 24 hrs
e-mail: kirk@arrl.org | GEnie K.KLEINSCHMI
==

642. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-12 07:40:37 UTC
From: Kerry Litvin <Litvin@NNFVAX.CORNELL.EDU>
Message-ID: <26ujplINNoav@newsstand.cit.cornell.edu>
Source record: 119556
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.amateur.misc

In article <26i5kj$edp@newsserv.cs.sunysb.edu> Rick Spanbauer,
rick@cs.sunysb.edu writes:

You can write a simple fortran program to do the conversions.
See, for example, Guillermo Gonzalez, "Microwave Transistor Amplifiers,"
pp24-25. Prentice Hall 1984. If you expect to extract a detailed model of
your devices, including the effects of pad parasitics, you will also need
to fabricate short circuited and open circuited test structures. I'm
assuming here that you are doing on-wafer coplanar waveguide probing of
the transistors. If you do not have these test structures available your
model will be narrow band because you will not be able to separate the
effects of the intrinsic device from the contact pads.

Best Regards,

Kerry

Litvin@NNFVAX.CORNELL.EDU

643. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-12 14:11:48 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep12.141148.19399@ke4zv.atl.ga.us>
Source record: 119557

In article <1993Sep11.025426.1880@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:
>Great thread, eh?
>Sounds like a used block converter is the way to go alright.
>2 problems remain...
>The antenna. What is the typical gain of a 6-7 foot dish? Do you
>think I could get by with a horn? Assuming I could keep the
>birds from nesting in it, it would be easier to mount on the
>chimney and less intrusive.

Remember that you need to resolve satellites spaced 2 degrees apart.
A horn to do that would be bigger than a 6 foot dish. A 6 footer
barely does it.

>The IF output. Particularly demodulation. God but I dread the
>notion of buying a TV! It may sound silly (OK it probably
>does sound silly) but it's against my philosophy to even
>own one, much less turn it on. Are chips readily available
>to roll your own TV tuner? A single frequency unit ought to be
>simple enough. I dont want it to even LOOK like a TV.
>
>By the way. It sounds like the LNB's are pretty much self contained.
>What are those control (?) boxes they sell with them that sit on the
>TV inside. If the LO is fixed frequency, what more is there to do
>but turn it on and off?
>
>Does the IF bandwidth of the LNB occupy the entire UHF band?
>Do LNB's usually come with the feedhorns attached?
>
>If LNB's are so cheap why do new TVRO systems cost so much?
>Where's the expensive part?

Ok, I don't think you completely understand how the system works
yet. Remember that TVRO signals are *FM* modulated. Ordinary
TV is *AM* modulated. The LNB block downconverts the *entire*
spectrum, either C band or K band to an IF frequency *band* in
the 1 GHz range. There the box on top of the set, the *receiver*,
then tunes an individual channel, FM detects it, and outputs
video and audio, and/or *remodulates* it as AM on an RF moduator
for reception on VHF channel 3 or 4 of an ordinary TV.

So if you have a *monitor* and an audio system, you don't need
a TV to watch satellite signals. You just take the baseband
audio and video *before* it's remodulated and use that.

There *aren't* any expensive parts to the system. The dishes
are available new in the $80-$200 range, with mount, the LNBs
are available new in the $80-$100 range, and the receivers are
available new in the $80-$200 range. Or, as others have noted,
you can find the components at fleamarkets for much less. Also,
buying a *packaged* system can result in considerable savings. As I
remarked, dealers at Dayton were selling complete C band systems
for $199, and even the Shack sells a system for $599. That *is*
cheap, no more than a decent TV or VCR. Systems get expensive
only if you want remote motor drive antenna pointing, dual axis
feeds, large dishes with their heavy concrete base mounts,
descramblers for premium channels, etc. Then you can drop a
grand or more for a system.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

644. Re: Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-12 16:38:32 UTC
From: mnoromaa@vipunen.hut.fi
Message-ID: <mnoromaa.747851912@vipunen.hut.fi>
Source record: 119558

In <40010001@opus.hpl.hp.com> walker@opus.hpl.hp.com (Rick Walker) writes:

>It recently occurred to me that a keyboard might be
>replaced with an iambic Morse keyer to reduce operator stress.

>Of course, there would need to be extensions made to Morse to send
>upper/lower case, control, escape, and all punctuation symbols.

Well, the problems of these were discussed in the newsgroup so I won't say
anything further about them.

>So here's how I've thought about implementing this: Start with a
>single chip micro with a RS-232 port and program up an iambic keyer
>with a lookup table. When the user sends a character, the RS-232 port
>will echo the ASCII equivalent to the computer.

So the program would actually be an iambic keyer itself? No, it would be
much too difficult to implement all those different timings used in different
keyers. It's best just to connect an existing keyer so that it keys one pin
of a COM or LPT-port. As you suggested:

>Alternatively, one could use a standard keyer circuit (Accukey or Curtis),
>and simply program up a Morse decoder. Does anyone have any ideas for
>algorithms for tracking the current dot/dash timing? You could remember
>the shortest and longest beep in the last few beeps and set the dot/dash
>timing threshold midway between, but there has to be more sophisticated
>algorithms.

I have created a program which I call CWREADER. Basically, it's intended to
copy CW from a keyer to a contest-logging program. That would be handy when
you are running a big contest-pileup and work much more comfortably with a
keyer than with a computer (F1, INS, F5, etc). CWREADER reads characters
from the keyer and inserts them into the keyboard type-ahead buffer from
where a contest-program (like CT, NA, etc.) can read them. It can also do
some tricks like detecting error-characters, supressing the copy of CQ TEST,
detecting 599 (--> makes the logging-program send the exchange), etc. etc.

I made CWREADER configurable in a large degree. All the keys it uses can
be defined as appropriate for ANY contest-program. I also included some
options to make it read CW from the keyer to DOS or some completely other
programs. It copies spaces (length configurable) and there are even 16
user-configurable CW-characters: you can, for example, set the 'character'
-..-.--.-.-..--. print as "/QRP".

CWREADER is everything else than complete. If you have questions about it,
feel free to send them to be, but if you would like a copy of the program,
you may have wait for some time...

73 to all of you de Mikko OH3LIM

```
/*************************************************************************/
/* Mikko Noromaa ** Amateur radio callsign: OH3LIM */
/* email: Mikko.Noromaa@hut.fi ** Pkt addr: OH3LIM@OH3RBA.#HML.FIN.EU */
/* or: mnoromaa@vipunen.hut.fi ***************************************/
/* Postal address: Kanavamaki 13 E 23, 00840 Helsinki, FINLAND */
/*************************************************************************/
```

645. Re: 311-A/B vaccuum tube info wanted.please?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-12 17:08:52 UTC
From: emd@ham.almanac.bc.ca
Message-ID: <HHXR0B3w165w@ham.almanac.bc.ca>
Source record: 119560

randy@cyphyn.UUCP (Randy) writes:

> Thanks for the info...here's what I've done so far:
>
> Using a VOM I checked the fil. Shows very much like a 24A fil.... o.7 ohm
> and a 24A wants 2.5 volts.
>
> If this 311A didn't have the closed off ends of the Kathode, I could just
> apply all the different standard voltages...1.25 1.4 2.0 2.5 2.8 5.0
> 6.3 etc etc......we can omit 1.4 2.0 2.8, as those are for the low current
> filamentary tubes (1U4 1AH5 3S4 , #30 #31 #32 etc) ...leaving 2.5 5 6.3
> volts.
> I'd apply power and watch the heater and see if it glows the right
> amount (orange)..... that then would be the proper volts.
>
> BUT...I can't see the fil! They have it covered by a ceramic bead on the bot
> and somthing (?) over the top.
>
> I'll have to get my tube tester back from where it's being borrowed, and 1st
> start at 2.5 v .... using a 24A setup, and see how it conducts... if bad,
> then try 5....then 6 then 12 then (grit my teeth) 24 ... until
> I see the cathode itself glow dull red-orange (hard to see INSIDE as well)
> or the tube indicates plate current...
>
> The end result is to be, to use it like a 24A...a 1 tube regenerating
> detector... like the 'Thrill Box' (it sure WOULD be if the earphones
> had a short from coil to case!) of the 30's.
>
> (Mean while, I'm making a 1 tube #26 transmitter...xtal controlled, good
> for at least 100 mw ... I only await arrival of xtals and xtal socket)
>
>
> --
> Randy KA1UNW If you get a shock while
> servicing your equipment, "Works for me!"
> randy@192.153.4.200 DON'T JUMP! -Peter Keyes
> You might break an expensive tube!

My 1967 ARRL Handbook lists the 211 and 311 together on the same line,
and gives specs for almost everything EXCEPT filament voltage.

My old RCA Transmitter Tubes manual, however, lists the 211 as a
discontinued tube (in 1962). It does say the 211's filament voltage is
10 volts, ac or dc, and 3.25 amps current.

If you need more information, I suggest you look for a '40's or 50's transmitting tube manual.

73, Bob.

Robert Smits There is *no* idiotproof filter.
VE7EMD Idiots are proof against anything!
Ladysmith B.C. - Richard Chycoski, VE7CVS
e-mail: emd@ham.almanac.bc.ca

646. LO isolation in upconverting rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 01:33:55 UTC
From: rick@cs.sunysb.edu
Message-ID: <270im3$mo1@newsserv.cs.sunysb.edu>
Source record: 119559

I am working on a design for a broadband up converting receiver architecture. For a while I had myself convinced that I could live without tracking frontend filters, at least until it became clear that LO leakage would be a problem. As is standard practice these days, I have a fairly strong first mixer specified, ie LO at about 13 dbm. The standard MCL mixers will give about 25 dB or so LO-> RF suppression and coupled with the first RF amp, I can see my way clear to about 35-40 dB total isolation which would put the LO leakage at the antenna connector at 13-40 = -27 dbm (too much). The LO is currently specified to produce RF+LO => IF, which puts its signal within the LPF passband in the frontend. I gather from looking at some existing designs that other designers setup their up converting designs to work as LO-RF = IF, which puts the LO signal well above the LPF passband. Here is the hitch: since the rcvr I am working on will operate 50 - 1000 mHz, with about 1200 mHz IF, my LO would have to cover 1250-2200 mHz which is pushing it a bit for a reasonable PLL design (eg prescaler availability). So it would seem that my options are to either split my coverage into a couple of bands and downconvert, or come up with a way of getting some more S12 in the frontend networks. My frontend amp is currently a MMIC, which has fairly rotten S12. A fet might get me further, though I would probably have to breakup the frontend into octave wide filter+amp combos to keep the gain managable as f -> 0. Advice anyone?

Rick Spanbauer, SUNY/Stony Brook

647. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 15:06:34 UTC
From: die@pig.UUCP
Message-ID: <1214@pig.UUCP>
Source record: 119561

In article <1993Sep11.025426.1880@mksol.dseg.ti.com> blair@mksol.dseg.ti.com (arthur blair) writes:
>2 problems remain...
>The antenna. What is the typical gain of a 6-7 foot dish?

At C band around 39 db.

>think I could get by with a horn? Assuming I could keep the
>birds from nesting in it, it would be easier to mount on the
>chimney and less intrusive.

I have used a horn experimentally many years ago, but it was pretty large and only barely adaquate. You do get better aparture efficiency with a horn but even so you are going to need a pretty big one because the difference is only about 4-5 db.

>The IF output. Particularly demodulation.

Most satellite receivers deliver RS-170 style video outputs as well as modulated rf. If you have a board for your PC that takes NTSC video as input you should be just fine. All current satellite video (prior to the Digicipher) is NTSC composite with the color information riding on the chroma subcarrier so you will need to use something that can do NTSC to rgb conversion. There are several commercial products available today that will do this as part of a multimedia PC environment and dump the video into memory via DMA.

Audio is direct RCA plug out on a satellite receiver (except commercial units which usually are balanced 600 ohm). So all you will need is a stereo.

> God but I dread the
>notion of buying a TV! It may sound silly (OK it probably
>does sound silly) but it's against my philosophy to even
>own one, much less turn it on.

I grew up in a house without a TV until I found one on the town dump and fixed it up (I was age 11). I strongly support your views on the idiot box, but my wife is a TV addict and so I have vastly too many of them. I make up for my hatred of the content by trying for the best picture possible. And satellite newsfeeds are very addictive.

> Are chips readily available
>to roll your own TV tuner? A single frequency unit ought to be
>simple enough. I dont want it to even LOOK like a TV.
>

Actually, you could probably find the whole tuner. They are
a standard item made for cable boxes and tvs in the far east.

>By the way. It sounds like the LNB's are pretty much self contained.

Yes they take +18 volts and deliver 950-1450 mhz over the
same 75 ohm coax. No adjustments needed. All TVRO units use
waveguide input and coax output.

>What are those control (?) boxes they sell with them that sit on the
>TV inside.

They are the tuner for the second IF that tunes a 10 mhz deviation
FM TV signal anywhere from 950-1450 mhz and demodulates it to video
and audio. Most of those boxes also include antenna positioning controllers
and power supplies and a descrambler for the pay services. No TV
understands wideband dithered FM TV signals with FM sound subcarriers at 6.8
mhz - it takes the receiver box to convert this to something the TV can
deal with.

If the LO is fixed frequency, what more is there to do
>but turn it on and off?

The first LO is a fixed frequency, but TVRO receivers are
usually double or more often triple conversion. The second LO
is usually frequency agile and synthesised to allow tuning of the
the 24 different transponders on a satellite.
>
>Does the IF bandwidth of the LNB occupy the entire UHF band?

LNBs usually output at 950-1450. When I mentioned tv tuner
technology I was refering to a varactor tuned converter design such
as used in TV tuners rather than literally a TV tuner. But some
very early block conversion systems did use UHF TV frequencies,
leakage from UHF TV stations forced the move to 950-1450.

>Do LNB's usually come with the feedhorns attached?
>
No the feedhorn is normally a separate component that bolts
to a waveguide flange on the LNB. There have been a few recent
integrated feed/LNB designs made but they are not yet common.

>If LNB's are so cheap why do new TVRO systems cost so much?

The receivers/descramblers are complex devices with lots of stuff
in them. And dishes contain significant metal and metal fabrication
costs. And antenna positioners and feed covers and all the other parts
cost money to make too. And TVRO systems are not sold in titantic
volumes by aggresive discounters which means that margins are high.

>Where's the expensive part?

GI gets about $300 for the descrambler module. A 10 foot dish and
a mount costs about $300 to make. And you can buy the parts of a complete

new system for as little as $500.

>Art.

David I. Emery - N1PRE - Lexington Mass.
Former senior technical consultant (and currently unemployed drunken bum)
Internet: jjmhome!pig!die@transfer.stratus.com (preferred) or die@world.std.com
UUCP: ...uunet!stratus.com!jjmhome!pig!die Phone + fax: 1+(617)-863-9986

648. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 18:23:44 UTC
From: markz@ssc.com
Message-ID: <1993Sep13.182344.17527@ssc.com>
Source record: 119567

arthur blair (blair@mksol.dseg.ti.com) wrote:

First, a note. There is a project for a satellite receiver in
the January 1986 Radio-Electronics magazine. It uses the old
70 MHz LNA system. It also uses an SAW filter (which may be
real hard to get) and an ECL gate as the IF amplifier.

: The IF output. Particularly demodulation. God but I dread the
: notion of buying a TV! It may sound silly (OK it probably
: does sound silly) but it's against my philosophy to even
: own one, much less turn it on. Are chips readily available
: to roll your own TV tuner? A single frequency unit ought to be
: simple enough. I dont want it to even LOOK like a TV.

Since the modulation for satellite signals is so different from
terrestrial tv (a 20 MHz wide FM signal with audio subcarriers in
the 5.5 to 8 MHz range), a satellite receiver has to demodulate down
to baseband. If you want a RF TV signal you have to create it
with a modulator. Which will usually causes some loss of signal
quality. So most every satellite reciever has baseband video and
audio outputs. A friend of mine uses the monitor from his old
Zenith Z100 computer, and runs the sound through his stereo.

: By the way. It sounds like the LNB's are pretty much self contained.
: What are those control (?) boxes they sell with them that sit on the
: TV inside. If the LO is fixed frequency, what more is there to do
: but turn it on and off?
:
: Does the IF bandwidth of the LNB occupy the entire UHF band?
: Do LNB's usually come with the feedhorns attached?

The input to the receiver is the entire 950 - 1450 MHz band
with all the signals (with the proper polarization) at once.
The reciver has a tuner module with a PLL synthesizer. An outfit
advertises tuner modules in Nuts and Volts magazine and probably
in the other electronics classified ad sections like that comes
every couple of months in Electronics Now (formerly Radio-Electronics).

: If LNB's are so cheap why do new TVRO systems cost so much?
: Where's the expensive part?

The dish, the descrambler, and the heaps of manure sitting around
the salesman's feet.

Mark Zenier markz@ssc.wa.com markz@ssc.com

649. Re: Finding Motorola SMT in small quantity

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 19:45:16 UTC
From: rkarlqu@scd.hp.com
Message-ID: <272ikc$h79@hpscit.sc.hp.com>
Source record: 119562
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,sci.electronics

In article <26t03s$716@newsserv.cs.sunysb.edu>,
Rick Spanbauer <rick@cs.sunysb.edu> wrote:
>Designing and building RF circuits is certainly a lot of fun, but it
>borders on the impossible to get modern parts in small quantity! Does
>anyone know of a source for small quantities of the Motorola MMBR901L
>(SMT version of the MRF901)? Active seems to carry some reasonable
>second choices to the MMBR901L, eg MMBR9411, but they say Moto will
>not let them break a rail to sell part in small quantity. Should I
>starting thinking Philips, Siemens, Mitsubishi (off shore) for RF
>parts, or is there a way to get Motorola in small quantities? I
>want to stay with SMT, since it is a bit of a drag to have to drill
>all the holes needed for through-hole when using home grown PCBs :-)
>
>BTW, anyone know whether the 2N4416(A) is available in SMT?
>
> Rick Spanbauer, WB2CFV
> State U of NY/Stony Brook

Unfortunately, there is no easy answer to this. Even with working
at HP (a supposedly "key account") and wanting to order 100 parts
for production, it is very tough to deal with Motorola. However,
Philips, Siemens and Mitsubishi are even harder to deal with.

As I have said before, if HP is using the part (and we do use
MRF9411's which are 4-leaded MMBR941s), you can order as few as
1 of them as a replacement part from HP's service center. I'll
apologize in advance for the huge markup compared to Motorola's
price list. Another approach is to see if Motorola's cellular
phone division, etc. uses the part and order it as a replacement
part from them. They might only mark it up half as much as HP.

Rick Karlquist
HP Santa Clara Division
rkarlqu@scd.hp.com

650. Re: LO isolation in upconverting rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 19:53:22 UTC
From: rkarlqu@scd.hp.com
Message-ID: <272j3i$hlk@hpscit.sc.hp.com>
Source record: 119563

In article <270im3$mo1@newsserv.cs.sunysb.edu>,
Rick Spanbauer <rick@cs.sunysb.edu> wrote:
>I am working on a design for a broadband up converting receiver architecture.
>For a while I had myself convinced that I could live without tracking frontend
>filters, at least until it became clear that LO leakage would be a
>problem. As is standard practice these days, I have a fairly strong first
>mixer specified, ie LO at about 13 dbm. The standard MCL mixers will give
>about 25 dB or so LO-> RF suppression and coupled with the first RF amp,
>I can see my way clear to about 35-40 dB total isolation which would
>put the LO leakage at the antenna connector at 13-40 = -27 dbm (too much).
>The LO is currently specified to produce RF+LO => IF, which puts its
>signal within the LPF passband in the frontend. I gather from looking
>at some existing designs that other designers setup their up converting
>designs to work as LO-RF = IF, which puts the LO signal well above the LPF
>passband. Here is the hitch: since the rcvr I am working on will operate
>50 - 1000 mHz, with about 1200 mHz IF, my LO would have to cover
>1250-2200 mHz which is pushing it a bit for a reasonable PLL design (eg
>prescaler availability). So it would seem that my options are to either
>split my coverage into a couple of bands and downconvert, or come up with a
>way of getting some more S12 in the frontend networks. My frontend amp is
>currently a MMIC, which has fairly rotten S12. A fet might get me further,
>though I would probably have to breakup the frontend into octave wide
>filter+amp combos to keep the gain managable as f -> 0. Advice anyone?
>
> Rick Spanbauer, SUNY/Stony Brook

An RF+LO = IF scheme has a lot of problems besides antenna radiation.
What do you do when you want to receive 600 MHz? RF=LO=600 MHz.= 1/2 IF.
Similar problems occur at 300, 400, and 800 MHz. Now you can see
why no one does it that way.

Rick N6RK
rkarlqu@scd.hp.com

651. Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-13 23:23:41 UTC
From: joe@netcom.com
Message-ID: <joeCDBFnI.CuG@netcom.com>
Source record: 119565
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

Been testing various techniques to obtain a low cost spectrum
display. Of course, the old standby is "The Poor Mans Spectrum Analyzer"
kit where a TV tuner is coupled to a sweep generator and a CA3089
FM receiver chip is used to amplify and generate the scope's Y
signal. You can stop the sweep and listen to the signal (FM but
Murrey swears you can detect and listen to AM off of the 3089's
S meter output pin).

One of my concerns is drift, as a simple TV tuner is used. Any
experience with this or drift correction?

One thought is to take a synthesized HF receiver and disable (open)
the PLL output (varactor tuning input) ans sweep the LO and RF...
The scope would be connected to the AGC or S meter and the sweep generator...

--

Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
21414 W. Honey Lane, Lake Villa, IL, 60046
----

652. Re: Morse Keyboard replacement

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 02:06:04 UTC
From: walker@opus.hpl.hp.com
Message-ID: <40010003@opus.hpl.hp.com>
Source record: 119566

In rec.radio.amateur.homebrew, byon@beach.csulb.edu (Byon Garrabrant) writes:

> In regards to the software, I put a lot of energy writing a morse-code
> decoder algorithm to decode even the sloppiest of fists. It does a real
> good job too.
> ...

> I experimented with several designs for handling the changing WPM rate,
> and settled on a rather simple scheme which only needed to keep track
> on the length of the last mark. I'd be glad to go further into it.

Byon,

Please elaborate. This is exactly the kind of practical algorithm that
I wanted to hear about!

--
Rick

653. Re: NASA select rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 16:21:34 UTC
From: David DiCarlo <r14793@waccvm.sps.mot.com>
Message-ID: <1993Sep14.162134.27236@newsgate.sps.mot.com>
Source record: 119475

This is a little off the subject of satellite tv, but does anyone know
where to get the smaller dishes (approx 2 ft dia) and downconverters for
receiving the terrestrial 1.8 gHz educational and wireless cable signals?

email or post here.

thanks,
dave dicarlo
r14793@waccvm.sps.mot.com

654. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 17:11:24 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep14.171124.29995@ke4zv.atl.ga.us>
Source record: 119470
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

In article <joeCDBFnI.CuG@netcom.com> joe@netcom.com (Joseph Jesson) writes:
>
> Been testing various techniques to obtain a low cost spectrum
>display. Of course, the old standby is "The Poor Mans Spectrum Analyzer"
>kit where a TV tuner is coupled to a sweep generator and a CA3089
>FM receiver chip is used to amplify and generate the scope's Y
>signal. You can stop the sweep and listen to the signal (FM but
>Murrey swears you can detect and listen to AM off of the 3089's
>S meter output pin).

Yep, real linear too.

>One of my concerns is drift, as a simple TV tuner is used. Any
>experience with this or drift correction?

Well you really don't care since the sweep is a form of "controlled"
drift across the frequency spectrum anyway. The sweep isn't perfectly
linear either. The tuners don't have a perfectly linear tuning rate.
When operating with zero dispersion, the monitor mode, you can enable
the AFC output from the 3089 with a little additional circuitry, but
it's usually not worth it since the PMSA really isn't a substitute
for a monitor receiver.

>One thought is to take a synthesized HF receiver and disable (open)
>the PLL output (varactor tuning input) ans sweep the LO and RF...
>The scope would be connected to the AGC or S meter and the sweep generator...

Two problems with this approach. First the IF is too narrow to allow
reasonable sweep rates, and the AGC system response way too slow.
You could use this method with a chart recorder, but it's hopeless
with a CRT for realtime display.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

655. Re: 311-A/B vaccuum tube info wanted.please?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 18:12:58 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep14.181258.21291@cyphyn.radnet.com>
Source record: 119473

emd@ham.almanac.bc.ca writes:
:
:
: My 1967 ARRL Handbook lists the 211 and 311 together on the same line,
: and gives specs for almost everything EXCEPT filament voltage.
:
: My old RCA Transmitter Tubes manual, however, lists the 211 as a
: discontinued tube (in 1962). It does say the 211's filament voltage is
: 10 volts, ac or dc, and 3.25 amps current.
:
: If you need more information, I suggest you look for a '40's or 50's
: transmitting tube manual.
:
: 73, Bob.
:
Ah ...you saw what I saw! THOSE are the power triodes which we
Thought we were ordering....but this is 311A/B which is a Receiving
pentode with a grid connector on top...very much like a 24A in all
respects.

The A and B suffix, back in those days was not like it is now...er
was ... in 60-70s... where 6AU6 and 6AU6A were the same tube except
for some special detail.

Some one else said they thought it might be 24 volts... ouch! On a tube
that shows .7 ohms?

I appreciate your effort....I'm on the hunt for a 40's Handbook...gotta
wait til the next Hamfest tho...or get some one who dealt with 311A/B's
at Western Electric.

73/tnx

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

656. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 18:25:11 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep14.182511.21387@cyphyn.radnet.com>
Source record: 119472
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

joe@netcom.com (Joseph Jesson) writes:
:
snip!

: kit where a TV tuner is coupled to a sweep generator and a CA3089
: FM receiver chip is used to amplify and generate the scope's Y
: signal. You can stop the sweep and listen to the signal (FM but
: Murrey swears you can detect and listen to AM off of the 3089's
: S meter output pin).
Oh really ? Thats good to know!
:
: One of my concerns is drift, as a simple TV tuner is used. Any
: experience with this or drift correction?
:
snip!

: The scope would be connected to the AGC or S meter and the sweep generator...
:
: --
: --
: Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
: --
I did a sort-of similar trick:
Using a sweep osc and a home brew direct conversion receiver with it's
audio out put , treble attenuated quit a lot.
As the sig. gen swept past, it would hetrodyne with the ext. signal and
so be readable on a Dumont (500kc) scope.
Sure, resolution was poor, but you could track down spurs and harmonix...
and get some idea how wide the signal was.

Drift...ehhh! Is is thermal? Don't forget, a TV tuner can slop around
a whole lot and not bother a TV's reception.

You'd need add in AFC....but you can't cuz you are sweeping the freq!

Why not make up a comb generator (100kc calibrator with a peak-up coil
on the band you want) to serve as a marker ...you'd then have each 100kc
on screen and it would track the drift....so if they swim around some,
it'll be in step with the signal anyway.....

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

657. Re: Finding Motorola SMT in small quantity

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 18:28:00 UTC
From: tskloss@zeus.tamu.edu
Message-ID: <14SEP199313282299@zeus.tamu.edu>
Source record: 119469
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,sci.electronics

>>Designing and building RF circuits is certainly a lot of fun, but it
>>borders on the impossible to get modern parts in small quantity! Does
>>anyone know of a source for small quantities of the Motorola MMBR901L
>>(SMT version of the MRF901)? Active seems to carry some reasonable
>>second choices to the MMBR901L, eg MMBR9411, but they say Moto will
>>not let them break a rail to sell part in small quantity. Should I
>>starting thinking Philips, Siemens, Mitsubishi (off shore) for RF
>>parts, or is there a way to get Motorola in small quantities? I
>>want to stay with SMT, since it is a bit of a drag to have to drill
>>all the holes needed for through-hole when using home grown PCBs :-)

>>BTW, anyone know whether the 2N4416(A) is available in SMT?
>>
>> Rick Spanbauer, WB2CFV
>> State U of NY/Stony Brook
>
>
If you can qualify as staff or student at an institution of higher learning,
you can try Motorola's University Support line (call 1-800 info for number).
They sent me some hard to find (6 weeks back-order everywhere I called) fiber
optic emmitters in three days. Just fax a letter with your ID card copied
to it to them asking for the parts. If the total is less that about 40 dollars
they ship it right to you with thanks for choosing Motorola (free samples!!).
They told me they will sample (around 5 to 10 units each) anything they are
currently producing. Good luck, they have made me very happy!

-tim
/--\
* *(* (**)(* *)* *)*	Tim Skloss
* * \/ \/ * *	Texas A&M University, Dept. of Chemistry
* /=========\ *	College Station, TX 77843-3255
*	OXFORD		LABORATORY FOR MAGNETIC RESONANCE AND
	mags.	*	MOLECULAR SCIENCE
*	RULE!		voice: (409) 845-4459
|_________|	fax: (409) 845-4719
|| ||	Internet: TSKLOSS@venus.tamu.edu
== ==	My opinions do not reflect those of TAMU!
\--/
"The brain is much like a computer;
there are really no dumb people, just people running DOS!"
PowerPC - The ULTIMATE personal computing machine.

658. Re: A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-14 21:03:35 UTC
From: lapin@casbah.acns.nwu.edu
Message-ID: <275bj7$c53@news.acns.nwu.edu>
Source record: 119471

In article <2457@indep1.UUCP>, Cliff Sharp <clifto@indep1.UUCP> wrote:
>In article <1993Sep4.224755.7687@news.uiowa.edu> drenze@icaen.uiowa.edu
(Douglas J Renze) writes:
>>wondering...just *what* does a capacitor do????
>
> One of the very best things you can do is to try to find a copy of
>"Inside Electronics" by Monroe Upton. (Out of print; ask the library.)
>Not only will you understand how capacitors work, you'll learn a great deal
>more. I learned more from that book than from ten years' study of
>electronics.
>--
>| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp
>| WA9PDM | Use whichever one works

Even closer to home: The ARRL Handbook. It describes capacitors, as well
as most other aspects of electronics and ham radio, superbly.

Greg Lapin KD9AZ
glapin@nwu.edu

659. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 00:04:24 UTC
From: rick@cs.sunysb.edu
Message-ID: <275m68$inu@newsserv.cs.sunysb.edu>
Source record: 119474
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

Randy (randy@cyphyn.radnet.com) wrote:
: Drift...ehhh! Is is thermal? Don't forget, a TV tuner can slop around
: a whole lot and not bother a TV's reception.

Ah, but not all tv tuners are created equal. Sitting on the desk
in my shack are 4 Phillips UV936 tuners which include the PLL - just
supply 33V (2ma), +5V, +12V, hook the I2C bus to your PC parallel
port and you've got a tunable frontend that will deliver a 4-6 mhz
chunk of downconverted RF (45 mHz IF) anywhere from 50-800+ mHz.
An old quote I have on the 936 puts the cost at about $33 in
1-24 quantities. With the UV936 as the basic frontend, it is
pretty trivial to hack up a NE602 as an upconvertor to cover the
0-50 mHz band and a bit more work to piece together another
downconvertor to cover 800-1550 (or so) mHz.

The UV936 would need an IF chain to go with it, eg a Phillips
NE615 would turn in reasonable dynamic range on its RSSI output.

FYI, Radio Electronics had a rather nice Spectrum Analyzer article
a few years back (Aug '91) which used a TV tuner + the NE615 as
the IF rcvr. There was a kit offered for about $260, but last I
heard it was no longer available in the kit form.

: Randy KA1UNW If you get a shock while

Rick Spanbauer, WB2CFV
SUNY/Stony Brook

660. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 11:00:58 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-748090852@unomaha.edu>
Source record: 119476
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.packet,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.4 06/30/93 12:04:14
Changes: new rec.radio.amateur.* newsgroups, cs.utexas.edu gateway

(Note: The following is reprinted with the permission of the author.)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 30 June 1993 to
add the groups created during the latest reorganization vote and the
description of the cs.utexas.edu gateway.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
arrangement, but one was that the system was not supposed to be used for
commercial purposes. Since one of hams' favorite pastimes is swapping
gear, it was natural for hams to post messages about equipment for sale
to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use
restriction, and after some argument, a group was created specifically
for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to
```

a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize this, and to encourage discussion not only of other text-based digital modes,

such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, has not been removed as of this writing, but it is obsolete, and you should use .digital.misc instead. The group has the .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. The neverending no-code debate goes here, as does the New Jersey scanner law, the legality of ordering a pizza on the autopatch, what a bunch of rotten no-goodniks the local frequency coordinating body is, and so on.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas, commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle

Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

The rec.radio.amateur.misc, .packet, and .policy groups, and the rec.radio.info group, are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server. The rec.radio.swap group is not available for reading by electronic mail. At this writing, the most recently added groups are also not available for reading by electronic mail, although that may change.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

661. Re: Any pointers to books for RF-design?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 13:01:28 UTC
From: rick@cs.sunysb.edu
Message-ID: <2773n8$or2@newsserv.cs.sunysb.edu>
Source record: 119477
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Eric de Paauw (paauw@stpc.wi.LeidenUniv.nl) wrote:
: Hi,
: After some experimentation I found that my knowledge of RF design is not
: as great as I had hoped. But, always willing to improve myself I tried to
: get a good book on the subject. To no avail, I might add, because the local
: bookstores do not stock these.
: Can anyone recommend a good book (covering everything there is to know
: about RF design) which is up to date with the current technology?
: Any information is very welcome.
: Eric
: paauw@stpc.wi.leidenuniv.nl

After spending the last 14 or so years doing digital design,
software, and systems, I have set out to learn about RF design.
Some references I have found useful:

ARRL Handbook, published by ARRL in Newington CT, USA (203)-666-1541
Good overall reference that explains some basics about
transmitters, receivers, RF circuitry, etc.

Solid State Circuit Design, by Hayward. published by the ARRL.
Nice intro handbook to RF & solid state design. A bit
cookbook-ish.

Microwave Circuit Design Using Linear and Nonlinear Techniques,
by Vendelin, Pavio, and Rhode. Published by John Wiley & Sons, NY.
Readable text on microwave circuit design, includes
example circuits (though text is far from being a cookbook).
Rather useless index, though.

RF Circuit Design, by Chris Bowick. Publish by Howard Sams & Co
Indianapolis, Indiana. I think you can buy a copy from Cardiff
Publishing 800-525-9154
Good intro to matching networks, filters, smith chart, etc.

Communications Receivers, Principles and Designs, by Rohde and Bucher.
Also available from Cardiff.
Probably "the" design book on receivers.

Microwave Solid State Circuit Design, by Bahl & Bhartia. Published
by Wiley & Sons.
Good overall reference text on microwave circuit design. Sure
wish I could convince Wiley to sell the solutions manual
to non faculty!

RF Design Magazine (303) 220-0600.
Good up to date design articles.

Microwaves & RF Magazine (don't have sub info off hand)
Up to date design articles.

Frequency control always comes up in RF design; here are some
reasonable texts:

Phase-Locked Loops, by Roland Best.
Very readable text on PLL design, latest version includes
software diskette and discussion of software & all digital PLL.

Digital PLL Frequency Synthesizers, by Ulrich Rhode. No longer
available from Prentice-Hall, but still available from Compact Software
in Paterson, NJ.
Good text on synthesizer design, circuits a bit dated. Word
from Compact is that Dr Rohde is working on an update.

Phaselock Techniques, FM Gardner. Published by Wiley & Sons.
Probably the classical text on PLLs. You hardly ever see
a paper on PLL theory that does not contain a reference to
Gardner.

Unlike some of their other transactions, IEEE Transactions on Microwave
Theory and Techniques publishes many papers that are manageable by
a non specialist. Refreshing to see the IEEE publish some work
written to communicate to the working engineer and not just help meet
the publication requirement for someones dissertation :-)

Add to the list your choice of basic texts on two ports and circuit
analysis. I like Millman Microelectronics, Johnson/Hillburn/Johnson
Basic Electric Circuit Analysis.

There is an eval version of PSpice for DOS/Windows floating around
on Internet FTP sites. This is very useful for trying things out
before committing them to solder.

Note that this is advice from a newbie in RF circuit design. There
are many folks on the net who actually know what they are doing :-) who
might have even better pointers.

Rick Spanbauer, WB2CFV
State U of NY/Stony Brook

662. 311A/B info found! Thanks!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 14:21:52 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep15.142152.668@cyphyn.radnet.com>
Source record: 119483

I got 2 replys about the tube, and so now know, it's 10v at .64 A.

Thanks to all...greatly appreciated.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

663. NE577 Audio Compandor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 16:24:30 UTC
From: seeler@UPEI.CA
Message-ID: <seeler.35.748110270@UPEI.CA>
Source record: 119478

I am unable to find a supplier in Eastern Canada for the Signetics NE577 audio compandor which was used in the audio controller project published in Electronics Now - Feb 1993. I am interested in putting the unit in my audio DSP filter. ANY HELP with regards to an equivalent part number would be greatly appreciated.

73 Dave, VY2DCS
Internet: Seeler@UPEI.CA

664. Re: A silly question...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 17:24:06 UTC
From: clifto@indep1.UUCP
Message-ID: <2471@indep1.UUCP>
Source record: 119484

In article <275bj7$c53@news.acns.nwu.edu> lapin@casbah.acns.nwu.edu (Gregory Lapin) writes:
>In article <2457@indep1.UUCP>, Cliff Sharp <clifto@indep1.UUCP> wrote:
>> One of the very best things you can do is to try to find a copy of
>>"Inside Electronics" by Monroe Upton. (Out of print; ask the library.)
>>Not only will you understand how capacitors work, you'll learn a great deal
>>more. I learned more from that book than from ten years' study of
>>electronics.
>
>Even closer to home: The ARRL Handbook. It describes capacitors, as well
>as most other aspects of electronics and ham radio, superbly.

I haven't seen the Handbook in several years, but if it's anything like the Handbooks I tried to learn from in the '60s and '70s, it doesn't even come close.
Let's put it this way; the Upton book describes in intimate detail exactly WHY and HOW a capacitor passes AC and blocks DC. Given a while to put my memories of the description into words, I could just about repeat that explanation. It's also written in language that assumes that the reader couldn't tell a capacitor from a helicopter. Can you say the same for the Handbook?
I've found the Handbooks I have to be good references... AFTER I understand the material. (Remember, these are the old ones.)
Here's another example of something you probably won't find in the Handbook: given a transistor of either "sex" (PNP, NPN), how do you change the base voltage to cause the transistor to conduct (emitter/collector) more heavily? (Answers from the Handbook ONLY, please.) Conditions: you don't have a voltmeter or other device with which to determine any of the voltages in the circuit or their polarity, and you have no idea whether the transistor is PNP or NPN.
The answer to this last little gem took me from requiring hours to troubleshoot a transistor circuit, blindly looking at voltages supplied on schematics and hoping I'd find a major anomaly, to minutes using the schematic only to determine what was connected to what.
--
+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

665. Re: Program, convert from S params -> Spice model

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 18:29:38 UTC
From: jeff@nsr.hp.com
Message-ID: <277mui$g4v@hpscit.sc.hp.com>
Source record: 119479
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

CAREY JOSEPH M (careyj@spot.Colorado.EDU) wrote:
> rick@cs.sunysb.edu (Rick Spanbauer) writes:

> > No, what my original posting sought was a program to take a set
> > of S parameters and crunch them into a linear, small signal
> > fet/bjt model - ie given the S params, gm, etc, produce a set of
> > component values that closely fit the measured parameters of
> > the transistor. SuperCompact can do this; I am looking for a lower
> > (ie freeware) alternative to SuperCompact. Getting spice to print
> > the h/s/z/y params for a specified circuit is something I already
> > know how to do ;-)
>
> Well, I was hoping to learn a better technique, but this thread has been
> around for a while with nobody commenting anything even this good.
>

There is a program that does what the original poster wants, but isn't
freeware (it's called ICCAP). However if you are with a university, you
can get a substantial education discount.

Jeff
--
==
Jeff Gruszynski
Semiconductor Test Equipment
Systems Engineer
Hewlett-Packard
==
(415) or T 694-3381
Jeff_Gruszynski@hpatc3.desk.hp.com
==

666. Re: NE577 Audio Compandor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 21:08:01 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Sep15150801@m2000.dseg.ti.com>
Source record: 119482

In article <seeler.35.748110270@UPEI.CA> seeler@UPEI.CA (David Seeler) writes:

> I am unable to find a supplier in Eastern Canada for the Signetics NE577
> audio compandor which was used in the audio controller project published in
> Electronics Now - Feb 1993.

You might try calling or writing the company that makes the kit to go along
with the article. I think they sell the compandor chip too(they probably have
a basket full of them). Here is the address I have:

C & S Electronics
PO Box 2142
Norwalk, CT, 06852-2142
Fax: (203) 866-3208

I know C and S Electronics offers the following options:

o Formed and drilled pc board for $12.95 (+$3 shipping)

o Complete kit of parts and pc board, excluding power supply and cabinet,
for $24.95 (+$3 shipping)

o An assembled and tested ALC module (model ALC225C)
for $32.95 (+$3 shipping)

(BTW, I have no relation to them)

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

667. Putting s-parameters into a spice simulation (again)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-15 21:23:07 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <27813r$3is@male.EBay.Sun.COM>
Source record: 119481

Some time ago I posted a question to the net inquiring if anyone had developed
a method for representing s-parameters in a Spice simulation as a 2-port
subcircuit. I got several replies giving me references for the inverse
problem (i.e. outputing s-parameters from a spice run) which I already knew
how to do.

This most recent thread on the subject has been addressing the
problem of modeling a MESFET characterized by means of s-parameters as a
spice subcircuit. As has been mentioned, this is a non-linear
large signal problem. I would like to pose my original question again in
the hope that perhaps their may be some new newsgroup participants that
may not have seen my earlier posts.

The question:

Does anyone know how [and be willing to tell :)] to model a
linear circuit described by s-parameters as a 2-port network in spice?

I am measuring IC package interconnects with a network analyzer,
and have measured s-parameter data. Currently we are creating models
composed of lossy transmission lines, inductors and capacitors to
represent the response of the IC package to fast rise time signals.
It is possible to create models with fairly good correlation to measured
data over a relatively wide bandwidth, however I would like to create
a "black-box" subcircuit that could be used in simulations whose
reflection/transmission characteristics could be defined by the measured
s-parameter data.

Any comments, ideas, or pointers to the literature would be
appreciated.

----
all comments and opinions are mine and mine alone and not those of
Sun Microsystems.

/\
\\ \
\ \\ /
/ \/ / / Raymond E. Anderson WB6TPU
/ / \//\ Signal Integrity Engineer
\//\ / / Sun Microsystems
/ / /\ / 2550 Garcia Ave. MS MIL04-16
/ \\ \ Mountain View, CA 94043-1100
\ \\
\/ (408) 276-5224

(408) 263-9512 fax
raymond.anderson@Sun.Com

668. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 09:48:12 UTC
From: sjaves@mason1.gmu.edu
Message-ID: <1993Sep16.044813.55157@gmuvax.gmu.edu>
Source record: 119485
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

A kit or product I'd like to see: A device which removes the laugh track from television programs. You'd be a hero if you could devise such a thing.

669. Need help - wiring Icom remote mic

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 11:08:29 UTC
From: dtock@nyx.cs.du.edu
Message-ID: <1993Sep16.110829.12479@mnemosyne.cs.du.edu>
Source record: 119486
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

I have an Icom IC21, and am trying to connect a headset to it.

I would like to wire the headset through a switch box with a PTT in it, but I notice the Icom mics (ie HM75) have up down and band select buttons as well.

Given that all the connections are through the mic and ext speaker jacks, that makes 5 switches, a mic and a speaker, all wired through 3 leads. plus ground and supply! I guess it is all done with resistors and capacitors (the mic isn't active is it?)

OK. So hows it done. Does anyone have a schematic for the HM75 or similar? Has anyone opened up theirs and can describe it for me. Basically, how the heck does it work???

Any information appreciated, even if it is based on other manufacturers, as it may be relevant. I have studied the circuits, but can not figure it out from there alone.

Thanks and 73s

David (GM0SYA)

670. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 14:55:11 UTC
From: Allen Wallace <allen@dtint.dtint.com>
Message-ID: <1993Sep16.145511.2302@dtint.uucp>
Source record: 119487
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

In article <275m68$inu@newsserv.cs.sunysb.edu> Rick Spanbauer,
rick@cs.sunysb.edu writes:
> Ah, but not all tv tuners are created equal. Sitting on the desk
> in my shack are 4 Phillips UV936 tuners which include the PLL - just
> supply 33V (2ma), +5V, +12V, hook the I2C bus to your PC parallel
> port and you've got a tunable frontend that will deliver a 4-6 mhz
> chunk of downconverted RF (45 mHz IF) anywhere from 50-800+ mHz.
> An old quote I have on the 936 puts the cost at about $33 in
> 1-24 quantities. With the UV936 as the basic frontend, it is
> pretty trivial to hack up a NE602 as an upconvertor to cover the
> 0-50 mHz band and a bit more work to piece together another
> downconvertor to cover 800-1550 (or so) mHz.
>

What is the smallest frequency step the Phillips tuner will tune?

How fast can it sweep?
--
---
root root@dtint.dtint.com
Digital Technology Int. (801)226-2984
500 W. 1200 South, Orem UT, 84057 FAX (801) 226-8438

671. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 18:12:23 UTC
From: rick@cs.sunysb.edu
Message-ID: <27aaa7$bmi@newsserv.cs.sunysb.edu>
Source record: 119488
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

Allen Wallace (allen@dtint.dtint.com) wrote:
: In article <275m68$inu@newsserv.cs.sunysb.edu> Rick Spanbauer,
: rick@cs.sunysb.edu writes:
: > Ah, but not all tv tuners are created equal. Sitting on the desk
: > in my shack are 4 Phillips UV936 tuners which include the PLL - just
: > supply 33V (2ma), +5V, +12V, hook the I2C bus to your PC parallel
: > port and you've got a tunable frontend that will deliver a 4-6 mhz
: > chunk of downconverted RF (45 mHz IF) anywhere from 50-800+ mHz.
: > An old quote I have on the 936 puts the cost at about $33 in
: > 1-24 quantities. With the UV936 as the basic frontend, it is
: > pretty trivial to hack up a NE602 as an upconvertor to cover the
: > 0-50 mHz band and a bit more work to piece together another
: > downconvertor to cover 800-1550 (or so) mHz.
: >

: What is the smallest frequency step the Phillips tuner will tune?

Smallest step is 62.5 kHz; the PLL comparison frequency is
7.8125 kHz, but the RF path has a divide by 8 prescaler that
yields the 8*7.8125 khz = 62.5 kHz step. The idea is that one
would sweep the IF passband in smaller steps, eg 10 kHz, as needed.

: How fast can it sweep?

Relatively slowly, probably due mostly to the low comparison
frequency. I recall seeing a number of around 50 ms, though
I do not have the datasheet in front of me at work. The slow lock
time would be a problem for wide b/w sweeps, ie tuning from
800->50 mHz in 4 mHz steps would take (800-50)/4 * 50ms = ~9 sec.

: root root@dtint.dtint.com
: Digital Technology Int. (801)226-2984
: 500 W. 1200 South, Orem UT, 84057 FAX (801) 226-8438

672. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 22:00:27 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep16.220027.10130@cyphyn.radnet.com>
Source record: 119490
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

sjaves@mason1.gmu.edu () writes:
: A kit or product I'd like to see: A device which removes the
: laugh track from television programs. You'd be a hero if you
: could devise such a thing.

Yeah! That and one to auto-mute the commercials.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

673. S-parameters in Spice (Summary of references)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-16 22:21:42 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <27aotm$3g0@male.EBay.Sun.COM>
Source record: 119489
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

Here is a compilation of some references I've accumulated with reference
to using S-parameters in SPICE simulations:

"S-Parameters in Spice"
Thomas Mills, RF Design June 1989

"Use Inexpensive Spice Files for S-Parameter Simulation"
R.J. Hasler, Microwaves & RF May 1993

"Methods to Obtain Z, Y, H, G, and S Parameters from the Spice Program"
K.B. Kumar and T. Wong, IEEE Circuits and Devices Magazine Sept. 1988

"S-Parameter Output from SPICE Program"
Ravender Goyal, IEEE Circuits and Devices Magazine March 1988

also:

For the inverse problem (i.e. using S-parameters as input
to a SPICE simulation rather output) I have received pointers to the
following articles:

@inproceedings{Eisenstadt91,
author="W. R. Eisenstadt and Y. Ho"
title="Determination of IC Interconnect Line Parameters by S-parameter
Measurements",
book="Proceedings of the 8th IEEE VLSI Multilevel Interconnection
Conference",
year=1991, pages={356--358}

@article{Eisenstadt91,
author="W. R. Eisenstadt and Y. Ho"
title="S-parameter-based IC interconnect transmission line
characterization,
journal="IEEE Trans. Comp., Hybrids, Manuf. Technology,
year=1992, month=Aug. volume=15 pages={483--490}

@article{Sakurai93,
author="T. Sakurai",
title="Closed-Form Expressions for Interconnection Delay, Coupling,
and Crosstalk in VLSI's",
journal=ieeeted,
year=1993, volume=40, number=1, pages={118--124}

If anyone has additions to the list, please post to the net and e-mail
me an updated copy.

---
opinions are mine and mine alone, not to be confused with those of SUN Microsystems
---

/\
\\ \
\ \\ /
/ \/ / / Raymond E. Anderson
/ / \//\ Signal Integrity Engineer
\//\ / / Sun Microsystems
/ / /\ / 2550 Garcia Ave. MS MIL04-16
/ \\ \ Mountain View, CA 94043-1100
\ \\
\/ (408) 276-5224
(408) 263-9512 fax
raymond.anderson@Sun.Com

674. Project 7: 15 watts on 80 and 40*

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-17 02:26:13 UTC
From: jherman@uhunix.uhcc.Hawaii.Edu
Message-ID: <CDH83p.4wx@news.Hawaii.Edu>
Source record: 119491

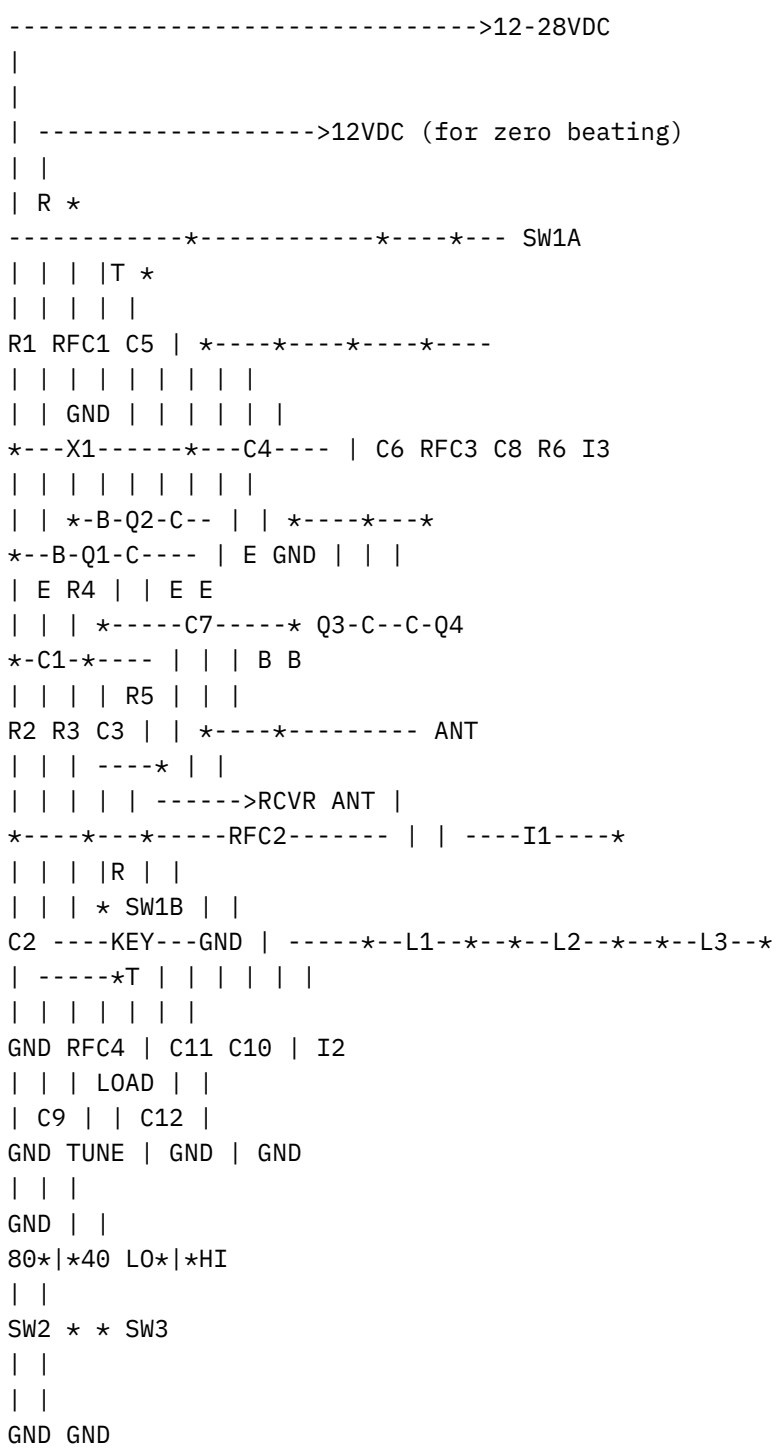
* If you are reading this on the rec.radio..homebrew newsgroup feel free
to run the full 15 watts. BUT, if you are reading this on the QRP mailgroup
you can only use this xmtr in the standby mode (a few milliwatts)(no fair
cheating now...).

Here's the most sophisticated xmtr project so far: 15 watts output on 40
and 80 meters. There is a standby mode which keeps the oscillator ticking
but cuts out the PA transistors - use this for zero-beating your rcvr to
the xmtr output frequency (uh, I guess this really isn't necessary with
today's receivers... This IS an old book).
The book is 104 HAM RADIO PROJECTS FOR NOVICE AND TECHNICIAN, by
Burt Simon, 1968.
Burt says:
"RFC1 should be a low resistance; use a 1/4 inch loopstick and at least
20 turns of #28 wire or larger. No component values are critical except for
the amplifier coils. The NE-2 bulb should be mounted flat against the
chassis near the #49 bulb with both leads connected to the antenna lead
and only stray capacitance to ground. Also be sure to use a fundamental-
frequency crystal. The oscillator transistor does not need a heat sink,
although you'll need a Wakefield #NF207 on the buffer transistor.
"Tuning: Only final amplifier adjustments are necessary. Tune always
for maximum output, NOT MINIMUM PA CURRENT. Normal tuning of C9 and C10
should bring about a satisfactory bulb brilliance. If antennas are under
30 feet (or 1/2 wave), output capacitance will be much less and tuning
capacitance more; the #49 bulb will show less current, but the neon bulb
will ignite showing high voltage feed. In general, tune for maximum
bulb brilliance regardless of load."

Parts List:

Q1,2 2N697 transistor; use Wakefield #NF207 heat sink on Q2
Q3,4 PADT50
C1,4,12 330 pF capacitor
C2 .068 mF
C3,5 .01 mF
C6,8 .22 mF electrolytic, 50V
C7 820 pF
C9,10 365 pF variable
C11 330 pF
R1 27K resistor
R2 3.3K
R3 330 ohms
R4 10K
R5 100 ohms 2W

R6 1.5 ohms 2W


----------->12-28VDC
|
|
| ----------->12VDC (for zero beating)
| |
| R *
----------*----------*----*--- SW1A
| | | |T *
| | | | |
R1 RFC1 C5 | *----*----*----*----
| | | | | | | | |
| | GND | | | | | |
---X1---------C4---- | C6 RFC3 C8 R6 I3
| | | | | | | | |
| | *-B-Q2-C-- | | *----*---*
*--B-Q1-C---- | E GND | | |
| E R4 | | E E
| | | *-----C7-----* Q3-C--C-Q4
-C1----- | | | B B
| | | | R5 | | |
R2 R3 C3 | | *----*--------- ANT
| | | ----* | |
| | | | | ------>RCVR ANT |
-------*-----RFC2------- | | ----I1----*
| | | |R | |
| | | * SW1B | |
C2 ----KEY---GND | -----*--L1--*--*--L2--*--*--L3--*
| -----*T | | | | | |
| | | | | | |
GND RFC4 | C11 C10 | I2
| | | LOAD | |
| C9 | | C12 |
GND TUNE | GND | GND
| | |
GND | |
80*|*40 LO*|*HI
| |
SW2 * * SW3
| |
| |
GND GND

Whew! Okay, note that the 40M terminal of SW2 is not connected to anything; neither is the HI terminal of SW3. As I written, C9 is the tuning and C10 is the loading capacitor.

Jeff NH6IL

675. Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-17 14:47:23 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27cilr$mkc@newscast.West.Sun.COM>
Source record: 119492

I've built some PLL synthesizers and learned quite a bit in doing so.
Is anyone interested in starting a thread about constructing PLL
synthesizers for HF and above?

Dana

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

676. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-17 15:07:35 UTC
From: rdewan@merle.acns.nwu.edu
Message-ID: <27cjrn$4gc@news.acns.nwu.edu>
Source record: 119493

In article <27cilr$mkc@newscast.West.Sun.COM>,
Dana Myers <myers@cypress.West.Sun.COM> wrote:
>
>I've built some PLL synthesizers and learned quite a bit in doing so.
>Is anyone interested in starting a thread about constructing PLL
>synthesizers for HF and above?
>
Sure. I find the topic very interesting.

My experience (if one can call it that) is minimal. I have designed a
few on paper using Mot chips but never tried them out. :) So they may
be worthless...

Rajiv
aa9ch
r-dewan@nwu.edu

677. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-17 16:18:17 UTC
From: datwyler@moons.sim.es.com
Message-ID: <27co09$nlm@moons.sim.es.com>
Source record: 119494

Why not? It is probably as important a topic as getting < 1W RF at the antenna. After all, if the 1W is out of band, it could be bad for you.

--
Douglas L. Datwyler, WR7O
Evans & Sutherland Computer Corp.
preferred e-mail: datwyler@moons.sim.es.com

678. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-17 16:29:36 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27colg$mkc@newscast.West.Sun.COM>
Source record: 119495

In article 4gc@news.acns.nwu.edu, rdewan@merle.acns.nwu.edu (Rajiv Dewan) writes:

>My experience (if one can call it that) is minimal. I have designed a
>few on paper using Mot chips but never tried them out. :) So they may
>be worthless...

The Motorola chips are quite good. Furthermore, if you look at the spec sheet for the MC4044 ECL Phase Comparator, an excellent discussion of side-band suppression is there.

I'll admit I have not used the formal PLL texts extensively; I plan to rectify this in the near future.

I built a 9MHz synth for a transceiver that implments IF shift. I use an MC145157P-1 (now superceded by the essentially identical MC145157P-2) driving an op-amp low-pass filter. The VCO is a JFET Hartley circuit. The output range of the synth is 8.990- 9.010 Mhz. I tune the synth by changing both the reference divider and loop divider values. I constrained the ranges of these values in order to not compromise the loop filter too much.

The application, as a carrier oscillator, requires good close-in spectral purity. However, since the carrier oscillator is used to create a DSB signal that is then filtered in an SSB filter, sensitivity to side-bands may not be too important as long as the sidebands are far enough away from the SSB filter response. I use a range of reference frequency from 8KHz to 12Khz in the current design, putting the closest sideband about 5.6KHz above the high end of the filter response. I selected a loop filter response such that the 1st sidebands are about -60dBc; this, combined with the steep skirt on the filter, should give at least 90dB of suppression to the undesired response (which is something like inverted audio).

Of course, one trades off loop response time for side-band suppression. Without using an adaptive loop filter, one can still have fairly fast lock-up times in a PLL if you don't mind strong sidebands every Fref interval above and below the carrier. In this case, the loop filter may permit the PLL to also suppress close-in phase noise in the VCO.

You can get very good sideband suppression, but this comes at the expense of greatly increased lock-up time and the PLL will not be able to suppress close-in phase noise in the VCO; in this case, you'll need to use a very clean i(high-Q) VCO to start with. A good compromise is to use an adaptive loop filter; the loop filter frequency response is greatly increased when an out-of-lock condition is detected. However, be careful not to let the loop become unstable (Actually, if the loop locks, even briefly, the adaptive filter would then go to normal operation, so it may not be critical to have

adequate damping when the loop is adapting).

I built my VCO in a copper clad box for the prototype. I used a T-50-2
toroid for the inductor. The circuit was quite microphonic until I squirted
a glop of hot-melt on the toroid; wax might be a better choice since it
is easier to remove. Also, the VCO is extremely sensitive to capacitive
coupling, like a theremin. Shielding the VCO in all directions cures this.
Once the loop is closed and the VCO locked, it tracks out drift quite effectively.
My VCO uses a pair of 2N3904 NPN transistors in a broadband buffer configuration,
but you can do almost anything you want to buffer the VCO.

If you decide to build a VCO on a PC board, be certain to include provisions
to shield the VCO in all directions, meaning you need to solder a shield
under the PC board, around the VCO, and on top of the VCO shield. [The Ramsey
VHF/UHF radios use a PLL that, I'm told, is not adequately shielded. This
usually results in the VCO coupling to almost anything, which makes the PLL
try to track it out, which tends to increase the sideband level. Moral is:
Be sure to adequately shield your Ramsey VCO if you build or have built one
of the kits.]

I don't feel like drawing ASCII art, but, if you are interested, I can
FAX you a hand-drawn schematic of the prototype circuit. Eventually
I hope to have a post-script representation.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

679. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-18 00:29:29 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CDIxD6.Hxq@news.Hawaii.Edu>
Source record: 119496

In article <27co09$nlm@moons.sim.es.com> datwyler@moons.sim.es.com writes:
>Why not? It is probably as important a topic as getting < 1W RF at the
>antenna. After all, if the 1W is out of band, it could be bad for you.
>--
>Douglas L. Datwyler, WR7O

Douglas, you left something very important out of the above (unintentionally, I'm sure); here, let me help: "...getting < 1W RF at the antenna yet working stations thousands of miles away." There, I'm sure that's what you intended to say, as my flooded mailbox full of notes from happy QRP homebrewers will attest..... I'd better add a :*)

Jeff NH6IL

680. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-18 00:39:01 UTC
From: ben@nj8j.atl.ga.us
Message-ID: <qRD20B2w165w@nj8j.atl.ga.us>
Source record: 119500
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

randy@cyphyn.radnet.com (Randy) writes:

> sjaves@mason1.gmu.edu () writes:
> : A kit or product I'd like to see: A device which removes the
> : laugh track from television programs. You'd be a hero if you
> : could devise such a thing.
>
> Yeah! That and one to auto-mute the commercials.

Or perhaps to auto-pause the VCR during commercials?

Ben

+-------------------------------------+---------------------------------+
Ben Coleman NJ8J	"All that is not eternal is
AX.25: NJ8J@W4QO.#EAL.#ATL.GA.USA.NA	eternally out of date."
Internet: ben@nj8j.atl.ga.us	C. S. Lewis
+-------------------------------------+---------------------------------+

681. Dany Stevig's kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-18 22:43:41 UTC
From: swamik@orca.ele.uri.edu
Message-ID: <CDKn4t.2tJ@egr.uri.edu>
Source record: 119497

Hi
I have heard alot about someone named Danny Stevig who sells kits.
Has anyone had any experience ordering from this guy? Anyone have a
list of kits and prices available? Please reply to my e-mail addr.

tnx es 73 de KB1AMB/AE

swamik@orca.ele.uri.edu

682. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-19 01:18:56 UTC
From: Tomi.Manninen@hut.fi
Message-ID: <TOMI.MANNINEN.93Sep19031856@delta.hut.fi>
Source record: 119498

In article <27cilr$mkc@newscast.West.Sun.COM>
myers@cypress.West.Sun.COM (Dana Myers) writes:

>I've built some PLL synthesizers and learned quite a bit in doing so.
>Is anyone interested in starting a thread about constructing PLL
>synthesizers for HF and above?

Well, for starters you could answer to one question for me. That is:
Is there a problem using a dual modulus prescaler intended for use
with synthesizers with negative edge triggered internal counters in
front of a PLL synthesizer chip with positive edge triggered internal
counters? In short form: can I use a MC145152 and a MC12022B together
without any special measures?

In the spec sheet of MC145152 it says that the output of the prescaler
should go from low to high after each P or P+1 input cycles (or was it
the other way around, can't remember right now). And the spec sheet of
MC12022 says that one should use a MC12022A with MC145xxx series
synthesizers.

As you could guess my system is above HF. VCO is abt 412 MHz and
prescaler 64/65. Reference frequency is 12,5 or 25 kHz (we'll see... :-)

--
---Tomi Manninen / Tomi.Manninen@hut.fi / OH2BNS @ OH2RBI.FIN.EU---

683. Rick Campbell's R2/T2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-19 03:23:28 UTC
From: rohrwerk@orac.holonet.net
Message-ID: <CDL036.2v4@iat.holonet.net>
Source record: 119499

was fascinated with those articles in QST in the last year about direct conversion, single signal receivers and a companion phasing SSB exciter, all realized with modern technology. Anybody built these? And did anybody ever get a kit from Rick? I'm a bit fearful of the prospect of closely matching those fixed inductors without any good test equipment!

John K0JD

684. NF3I -- Scott Rosenfeld

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-19 18:09:43 UTC
From: aflorenc@news.vt.edu
Message-ID: <aflorenc.5.748462183@news.vt.edu>
Source record: 119501

Attention Scott Rosenfeld, NF3I, in Maryland. Please E-mail me.

Adam Florence
aflorenc@vt.edu

685. Like to see these kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 13:17:37 UTC
From: manfrin@cli.di.unipi.it
Message-ID: <1993Sep20.131737.12318@serra.unipi.it>
Source record: 119502

I wish to build a low cost FM/NARROW receiver, does anyone have
a kit such this? And what about a transmitter?

Thanks, Samuele

==
Samuele Manfrin | Opinions expressed here are of
manfrin@cli.di.unipi.it | Elvis Presley
==

686. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 14:59:49 UTC
From: dstock@hpqmoca.sqf.hp.com
Message-ID: <CDnqzq.J2M@hpqmoea.sqf.hp.com>
Source record: 119503

Dana Myers (myers@cypress.West.Sun.COM) wrote:

: The Motorola chips are quite good. Furthermore, if you look at the spec
: sheet for the MC4044 ECL Phase Comparator, an excellent discussion of
: side-band suppression is there.

Just a small niggle;

MC4044 is the (antique-ish) TTL phase detector

MC12040 is the ECL one

The other popular bits were MC1648 ecl oscillator (LC)

MC4024 ttl dual oscillator

MC1658 ecl multivibrator

Analogue devices have a newer ECL phase detector part.

The 74HC(T)4046 has a good phase detector.

Not criticism, just an attempt to prevent risk of propagation of a
small confusion.

Cheers
David GM4ZNX

687. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 16:59:13 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <27knh1$8f6@male.EBay.Sun.COM>
Source record: 119505

In article J2M@hpqmoea.sqf.hp.com, dstock@hpqmoca.sqf.hp.com (David Stockton) writes:
.>Dana Myers (myers@cypress.West.Sun.COM) wrote:
.>
.>: The Motorola chips are quite good. Furthermore, if you look at the spec
.>: sheet for the MC4044 ECL Phase Comparator, an excellent discussion of
.>: side-band suppression is there.
.>

A couple comments about phase detectors in general. In some synthesizer
designs I've done quite a while ago for satcom applications we noticed that
phase detectors with tri-state outputs exhibited zero gain when the phase detector
goes tri-state when locked.

This causes the loop-gain to go to zero and the reference spurs to increase in
amplitude. The fix was to inject a small amount of offset current into the loop-amp
input so that the phase detector never saw zero phase error but was continuously
working to provide phase correction. In this condition the loop gain didn't drop
off to zero at the lock point since the detector never tri-stated.

.>
.> Just a small niggle;
.>
.> MC4044 is the (antique-ish) TTL phase detector

Yep !!!

.>
.> MC12040 is the ECL one
.>
.>
.>
.> The other popular bits were MC1648 ecl oscillator (LC)

The phase noise of MC1648 oscillators is pretty pathetic if you
use the part as suggested in the app notes, though there are things that can
be done to ameliorate it a bit and make it useful for some purposes. The lo-Z
load presented by the chip input tended to de-Q the LC Tanks. link coupling
tended to improve things. Transmission line resonators constructed from semi-rigid
coax can be made into pretty go resonators for for these oscillators. Improved
DC bypassing of the on-chip AGC can improve the chips phase-noise performance.

.>
.> MC4024 ttl dual oscillator
.>
.> MC1658 ecl multivibrator
.>

.>
.> Analogue devices have a newer ECL phase detector part.
.>
.> The 74HC(T)4046 has a good phase detector.
.>
.>
.> Not criticism, just an attempt to prevent risk of propagation of a
.>small confusion.
.>
.> Cheers
.> David GM4ZNX

For further discussion:

1. Anyone have comments on sample and hold phase detectors for ultra
low noise applications?

2. Has anyone else done any work with phase-locking SAW oscillators?
What kind of tuning range have you been able to achieve?

---
comments and opinions are mine alone and not those of my employer
(or even previous employers)

/\
\\ \
\ \\ /
/ \/ / / Raymond E. Anderson WB6TPU
/ / \//\ Signal Integrity Engineer
\//\ / / Sun Microsystems
/ / /\ / 2550 Garcia Ave. MS MIL04-16
/ \\ \ Mountain View, CA 94043-1100
\ \\
\/ (408) 276-5224
(408) 263-9512 fax
raymond.anderson@Sun.Com

688. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 17:04:19 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27knqj$hdd@newscast.West.Sun.COM>
Source record: 119504

In article 93Sep19031856@delta.hut.fi, Tomi.Manninen@hut.fi (Tomi Manninen) writes:
>Well, for starters you could answer to one question for me. That is:
>Is there a problem using a dual modulus prescaler intended for use
>with synthesizers with negative edge triggered internal counters in
>front of a PLL synthesizer chip with positive edge triggered internal
>counters? In short form: can I use a MC145152 and a MC12022B together
>without any special measures?

I haven't had a chance to look at the data book(s), but I believe that
(a) Motorola recommends the MC12022 for use with the MC1451xx PLL
synthesizers, at least some of them. It doesn't really matter which
edge of the VCO signal triggers the prescaler as long as the output
of the prescaler generates the correct transition for the PLL phase
comparator. If the output of the prescaler is of 50% duty cycle,
I'd guess it wouldn't matter, but I'm certain the prescaler does not
have a 50% duty cycle :-).

I'm pretty certain the MC1451xx PLLs use a postive-edge triggered
phase comparator.

>In the spec sheet of MC145152 it says that the output of the prescaler
>should go from low to high after each P or P+1 input cycles (or was it
>the other way around, can't remember right now). And the spec sheet of
>MC12022 says that one should use a MC12022A with MC145xxx series
>synthesizers.

Gosh, why are you asking me if the data book recommends using the
two together? :-) If you are really in doubt, I can look at my data
books to confirm this.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

689. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 17:22:59 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep20.172259.5088@cyphyn.radnet.com>
Source record: 119511
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

ben@nj8j.atl.ga.us (Ben Coleman) writes:
: randy@cyphyn.radnet.com (Randy) writes:
:
: > sjaves@mason1.gmu.edu () writes:
: > : A kit or product I'd like to see: A device which removes the
: > : laugh track from television programs. You'd be a hero if you
: > : could devise such a thing.
: >
: > Yeah! That and one to auto-mute the commercials.
:
: Or perhaps to auto-pause the VCR during commercials?
:
: Ben
:
Ah HA! There we go!...hey....most comercials are LOUD and use excess colour.

I wonder, I wonder, I wonder.....

(excess colour, in that they run the drive way up so the colour is near-
saturated...not 'normal' as in the movie itself)

I timed the commercial 'break' in a recent movie....12 minutes long!!!!!

TV of the future:

String of commercials ; then announcer appears on screen and sez...

"Now, we'll hear a few words from our movie"

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

690. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 17:29:11 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep20.172911.21574@kocrsv01.delcoelect.com>
Source record: 119516
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <qRD20B2w165w@nj8j.atl.ga.us>, ben@nj8j.atl.ga.us (Ben Coleman) writes:
> randy@cyphyn.radnet.com (Randy) writes:
>
> > sjaves@mason1.gmu.edu () writes:
> > : A kit or product I'd like to see: A device which removes the
> > : laugh track from television programs. You'd be a hero if you
> > : could devise such a thing.
> >
> > Yeah! That and one to auto-mute the commercials.
>
> Or perhaps to auto-pause the VCR during commercials?
>

I personally would pay $25 to get rid of "Burger King" commercials. . .

There is something that grates on me about that idiot's voice that
yells "I love this place!"

Burger King, are you out there? I've stopped eating your food
BECAUSE of your irritating commercials!!!!!!
--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

691. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 17:55:32 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27kqqk$j3p@newscast.West.Sun.COM>
Source record: 119506

In article 8f6@male.EBay.Sun.COM, raymonda@uranium.EBay.Sun.COM (Ray Anderson) writes:
>In article J2M@hpqmoea.sqf.hp.com, dstock@hpqmoca.sqf.hp.com (David Stockton) writes:
>..>Dana Myers (myers@cypress.West.Sun.COM) wrote:
>..>
>..>: The Motorola chips are quite good. Furthermore, if you look at the spec
>..>: sheet for the MC4044 ECL Phase Comparator, an excellent discussion of
>..>: side-band suppression is there.
>..>
>
> A couple comments about phase detectors in general. In some synthesizer
>designs I've done quite a while ago for satcom applications we noticed that
>phase detectors with tri-state outputs exhibited zero gain when the phase detector
>goes tri-state when locked
>
>This causes the loop-gain to go to zero and the reference spurs to increase in
>amplitude. The fix was to inject a small amount of offset current into the loop-amp
>input so that the phase detector never saw zero phase error but was continuously
>working to provide phase correction. In this condition the loop gain didn't drop
>off to zero at the lock point since the detector never tri-stated.

Interesting. As I recall (and you mention), the phase detector output is
tri-stated as long as the VCO is phase-locked to the reference. In this
state, the VCO shouldn't require any adjustment and the loop filter output
should not change.

The source of reference spurs on the output of the VCO is FM due to feedthrough
of the reference through the loop filter. The lower the corner frequency of
the loop filter is with respect to the reference frequency, the more the attenuation
of the reference frequency signal in the phase detector output and the better the
the suppression of reference side-bands. A tri-state phase comparator would
appear to generate no signal at all during a locked state; the input to the
loop filter would be open circuited.

Given this, I do not believe the description using "zero loop gain" is correct.
Yes, during the locked state the phase comparator has no gain. However, since
the loop is locked no change in the control signal is required, in fact, maximum
suppression of the reference frequency is desired. By having the phase comparator
disable all output during a locked state, it makes sense that the reference
frequency can not be feeding through the loop filter while locked.

Also, I'm not certain how you compare reference spurs in a locked state
with reference spurs in an unlocked state. Can you describe the procedure
you used to measure reference sidebands while the loop is unlocked?

Nonetheless, I do believe you saw decreased reference spurs when bias was
added to the loop filter input. I do not believe this happened because the bias

made the phase comparator stay out of the zero gain state. I believe your loop filter suffered from bias currents in the first place. These bias currents caused your loop filter output to drift while in a locked state and the phase detector was tri-stated. Places where this bias current would come from include the inputs of op amps (if any are used in your filter) and leakage of filter capacitors (an electrolytic could have leakage in excess of an op amp input). By intentionally adding bias to the loop filter input, you probably swamped out the internal biases, causing the loop filter to remain more stable curing the locked state.

To sumarize: I do not believe the tri-state phase comparator could possibly cause FM of the VCO during a locked state since no signal is present at the output. Therefore, the reference sidebands must have been caused by the loop filter leakage/bias currents themselves perturbing the loop.

The MC4044 data sheet, by the way, discusses this very issue, that of loop amplifier bias currents increasing the sideband level.

>..>
>..> Just a small niggle;
>..>
>..> MC4044 is the (antique-ish) TTL phase detector
>
> Yep !!!

Yeah. But it *is* in the Motorola MECL data book....

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

692. Re: Like to see these kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 18:50:12 UTC
From: geertj@ica.philips.nl
Message-ID: <1993Sep20.185012.28991@ica.philips.nl>
Source record: 119507

manfrin@cli.di.unipi.it (Samuele Manfrin) writes:
>I wish to build a low cost FM/NARROW receiver, does anyone have
>a kit such this? And what about a transmitter?

Check out the MC3362. Includes almost anything: mixer, VCO, 1st IF, mixer,
xtal osc, 2nd IF, discriminator, squelch.. all in one 24 pin chip!
For decent sensivity, you'd need to add a pre-amplifier and some
other small parts (filters and such) and you're all set.
Something like this was described in QEX. Also, the app notes describe
the chip quite well.

Have fun,

Geert Jan

BTW, did someone see an up to date datesheet yet?
All I have is preliminary.

693. Re: Low Cost Spectrum Analyzer

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 19:15:28 UTC
From: amigo@halcyon.com
Message-ID: <27kvgg$lst@nwfocus.wa.com>
Source record: 119508
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics,rec.radio.shortwave

Several computer systems are becomming decent spectrum analyzers
for the audio spectrum -- these include the Commodore Amiga, and PCs.
The Amiga needs a sampler module, while the PC needs a sampling card (16-bit).
I have a PC with a Pro Audio Spectrum 16, the software out for it has a FFT
spectrum analyzer that will do 2048 points at 10 mS or so.
On the Amiga end, a Perfect Sound sampler and the spectrum analyzer software does FFTs on a lowly 68000. Though its nothing as fast as the PC,
it will do a hundred points or so relatively fast. Amiga 500s are cheap --
$100 or so, coupled to the sampler ($40), you have a real nice audio spectrum
analyzer that does a lot (compared with plug-ins or dedicated units which can
run up to and over $1000).

--> Scott

694. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 20:52:49 UTC
From: Tomi.Manninen@hut.fi
Message-ID: <TOMI.MANNINEN.93Sep20225250@delta.hut.fi>
Source record: 119509

In article <27knqj$hdd@newscast.West.Sun.COM> myers@cypress.West.Sun.COM (Dana Myers) writes:
>In article 93Sep19031856@delta.hut.fi, Tomi.Manninen@hut.fi (Tomi Manninen) writes:

>>In the spec sheet of MC145152 it says that the output of the prescaler
>>should go from low to high after each P or P+1 input cycles (or was it
>>the other way around, can't remember right now). And the spec sheet of
>>MC12022 says that one should use a MC12022A with MC145xxx series
>>synthesizers.
>Gosh, why are you asking me if the data book recommends using the
>two together? :-) If you are really in doubt, I can look at my data
>books to confirm this.

That's just it. It doesn't. Recommend I mean. It recommends using the
A-model and I wanted to use the B-model. The difference between
MC12022A an MC12022B seems to be that the ones output is inverted and
the others is not. The problem is that I happen to have a MC145152 and
a MC12022B and since these parts can be quite hard to get in small
quantities I'd like to use what I have.

So if you could check your databooks, I'd sure appriciate it.

(Actually I have already decided to build the darned thing and see
what it does. And if it doesn't work i'll figure something out... :-)

--
---Tomi Manninen / Tomi.Manninen@hut.fi / OH2BNS @ OH2RBI.FIN.EU---

695. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-20 21:38:56 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <27l7tg$9fu@cc.tut.fi>
Source record: 119510

Dana Myers (myers@cypress.West.Sun.COM) wrote:

> The source of reference spurs on the output of the VCO is FM due
> to feedthrough of the reference through the loop filter.
> The lower the corner frequency of the loop filter is with respect
> to the reference frequency, the more the attenuation of the reference
> frequency signal in the phase detector output and the better the
> the suppression of reference side-bands.

As a related topic, which is the correct way to design a Cauer loop
filter ? Some sources say that the notch should be at the reference
frequency. This looks strange to me, as a quadrature phase detector
produces during lock a DC-component (loop control voltage) and
twice the reference frequency.

Are there other filter designs that filter out the reference components
without affecting too much the loop bandwidth in order to reduce the
phase noise and eliminate the microphonics in a VCO ?

Paul OH3LWR

Phone : +358-31-213 3657
X.400 : G=Paul S=Keinanen O=Elisa-Tampere A=ELISA C=FI
Internet: Paul.Keinanen@Telebox.tele.fi
Telex : 58-100 1825 (ATTN: Keinanen Paul)
Mail : Hameenpuisto 42 A 26
FIN-33200 TAMPERE
FINLAND

696. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 01:20:31 UTC
From: aa570@cleveland.Freenet.Edu
Message-ID: <27lksv$99@usenet.INS.CWRU.Edu>
Source record: 119512
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

```
:
: Or perhaps to auto-pause the VCR during commercials?
:
: Ben
:
Ah HA! There we go!...hey....most comercials are LOUD and use excess colour.

I wonder, I wonder, I wonder.....

(excess colour, in that they run the drive way up so the colour is near-
saturated...not 'normal' as in the movie itself)

---------------------------------------------------------------

Sorry, to shoot you down Randy, but there is no clear and definite way
to detect commericals. Each network and cable company has varying
technical people and delivery of the signal is almost allways different.

Radio electronics ran a article way back in 1981-1982 which depected
a Color Burst detector which would PAUSE a VCR when recording BW old movies.
Well, BW is getting colorized and it used to be, they would turn off
the back porch color burst on a NON color broadcast, NOT so for many
moons. I have seen people try to use the commerical audio which is usually
compressed very high to wake up or get the attention of TV watchers.
You could possible make a method to track when a commerical started and
stopped, but you would almost allways LOSE some scenes.

So, there is NO PROVEN way to BLANK out commericals from vcr taping.
The problems are manifold and defy tecnho-guys from making it....
And even if someone could make one, you DON'T think they would re-engineer
commericals to null and void the method. The method of taping old BW
movies by detecting the absence or presence of Color Burst or Cromna signal
was at least workabnle, if not perfect. The other methods are untentible.
So, CROSS it off your wish list....

Why not a Talking Linear amp. "Tune 40 meters Please.... " The young Ham
asked, "Yesss .... Master", it cooed in a realistic Meg Megan voice
inflection.

At least that is possible :) :)

jim
```

697. Re: Like to see these kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 01:21:30 UTC
From: joe@netcom.com
Message-ID: <joeCDoJrv.4wr@netcom.com>
Source record: 119513

Yes, the MC3362 is a fantastic complete receiver chip. Check out its sister chip, the MC3363 - a surface mounted version of the 3363 but WITH AN RF STAGE!! Ok, here is the lineup:

RF Amp Stage, 1st Mixer, 1st Local Osc (with built-in Varactor!), 2nd Mixer, 2nd LO, Limiter and IF Amp, Quadrature Detector, Signal Strength Output, Squelch, Audio (line output). ALL ON ONE CHIP!

The notes I have are from Motorola, the AN980 MC3362/3363 FM Receiver Design Application Note. Authors (from Motorola) are Jon Stilwell and Ricky Ng. Wonder if they are on the Net?

The application note shows a 1988 date. I also wonder if a new version is available?

--Joe Jesson

PS: The chips were designed for the cordless phone mkt...

--

Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
21414 W. Honey Lane, Lake Villa, IL, 60046
---

698. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 06:07:40 UTC
From: claude@bauv.unibw-muenchen.de
Message-ID: <claude.748591660@bauv106>
Source record: 119514

myers@cypress.West.Sun.COM (Dana Myers) writes:

>I've built some PLL synthesizers and learned quite a bit in doing so.
>Is anyone interested in starting a thread about constructing PLL
>synthesizers for HF and above?

Yes, I'm very interested, especially on the design of such circuits.
--
Claude F.

This message may contain opinions which are not shared by my employer.
The facts can speak for themselves.

699. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 06:24:22 UTC
From: nagle@netcom.com
Message-ID: <nagleCDoxsn.733@netcom.com>
Source record: 119515
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>: Or perhaps to auto-pause the VCR during commercials?
>: Ben
>Sorry, to shoot you down Randy, but there is no clear and definite way
>to detect commericals. Each network and cable company has varying
>technical people and delivery of the signal is almost allways different.

Such devices have been built and sold. I saw one at the Radio
Shack at Stanford Shopping Center about ten years ago. I spent some
time playing with it, and it really did work. It was designed to control
a VCR (one of a few models) and record everything but commercials.
I tried it on a basketball game. It let the recorder run, and when
a commercial started, about five seconds into the commercial, it
stopped the recorder and backed it up. When the next commercial started,
so did the recorder, but again, a few seconds later, the system detected
that it was seeing a commercial and backed up the recorder again. After
the commercial break, it continued recording the game. On playback,
all the commercials had been removed with no loss of program.

But I have no idea how they did it. The manual mentioned
artificial intelligence. It definitely wasn't just detecting color vs
black and white.

Many commercials have codes in the vertical interval used for
billing, and it may have detected those.

John Nagle

700. sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 07:12:36 UTC
From: swilhelm@[128.215.114.181]
Message-ID: <930921071236@spence>
Source record: 119318

I'm having trouble understanding how superhet recievers filter
out one sideband of a CW singnal. Is this filtering done by the
IF filter or a function of the BTO? How does the mechanism work?
I've read the sections about this in the Handbook and RF Design
but neither say much about the subject. Can anyone shed some light
on this subject?

--
Spence Wilhelm KB7TCY Intel Corporation
(602)554-5050 5000 W Chandler Blvd

701. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 10:41:42 UTC
From: stkaba@uta.fi
Message-ID: <27mlp6$934@vuokko.uta.fi>
Source record: 119517

Dana Myers (myers@cypress.West.Sun.COM) wrote:

: I've built some PLL synthesizers and learned quite a bit in doing so.
: Is anyone interested in starting a thread about constructing PLL
: synthesizers for HF and above?

I would like to join, just now I am planning a 100 to 200MHz VCO
with binary band switching, and have done small computer program
determining required inductor and capacitor values.
It would be interesting see if anyone else has experiences on binary
band switching .

Kari

Kari Back E-mail stkaba@uta.fi
Riistakatu 3 Tel. 358-31-534661
33520 Tampere, Finland
---

702. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 16:04:35 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <27n8mj$ctg@male.EBay.Sun.COM>
Source record: 119319

In article j3p@newscast.West.Sun.COM, myers@cypress.West.Sun.COM (Dana Myers) writes:
.>In article 8f6@male.EBay.Sun.COM, raymonda@uranium.EBay.Sun.COM (Ray Anderson) writes:
.>>In article J2M@hpqmoea.sqf.hp.com, dstock@hpqmoca.sqf.hp.com (David Stockton) writes:
.>>..>Dana Myers (myers@cypress.West.Sun.COM) wrote:
.>>..>
.>>..>: The Motorola chips are quite good. Furthermore, if you look at the spec
.>>..>: sheet for the MC4044 ECL Phase Comparator, an excellent discussion of
.>>..>: side-band suppression is there.
.>>..>
.>>
.>> A couple comments about phase detectors in general. In some synthesizer
.>>designs I've done quite a while ago for satcom applications we noticed that
.>>phase detectors with tri-state outputs exhibited zero gain when the phase detector
.>>goes tri-state when locked
.>>

(details deleted)
.>
.>Interesting. As I recall (and you mention), the phase detector output is
.>tri-stated as long as the VCO is phase-locked to the reference. In this
.>state, the VCO shouldn't require any adjustment and the loop filter output
.>should not change.
.>
.>The source of reference spurs on the output of the VCO is FM due to feedthrough
.>of the reference through the loop filter. The lower the corner frequency of
.>the loop filter is with respect to the reference frequency, the more the attenuation
.>of the reference frequency signal in the phase detector output and the better the
.>the suppression of reference side-bands. A tri-state phase comparator would
.>appear to generate no signal at all during a locked state; the input to the
.>loop filter would be open circuited.
.>
.>Given this, I do not believe the description using "zero loop gain" is correct.
.>Yes, during the locked state the phase comparator has no gain. However, since
.>the loop is locked no change in the control signal is required, in fact, maximum
.>suppression of the reference frequency is desired. By having the phase comparator
.>disable all output during a locked state, it makes sense that the reference
.>frequency can not be feeding through the loop filter while locked.
.>
.>Also, I'm not certain how you compare reference spurs in a locked state
.>with reference spurs in an unlocked state. Can you describe the procedure
.>you used to measure reference sidebands while the loop is unlocked?
Whoops!
.>
.>Nonetheless, I do believe you saw decreased reference spurs when bias was

.>added to the loop filter input. I do not believe this happened because the bias
.>made the phase comparator stay out of the zero gain state. I believe your
.>loop filter suffered from bias currents in the first place. These bias
.>currents caused your loop filter output to drift while in a locked state
.>and the phase detector was tri-stated. Places where this bias current would
.>come from include the inputs of op amps (if any are used in your filter) and
.>leakage of filter capacitors (an electrolytic could have leakage in excess
.>of an op amp input). By intentionally adding bias to the loop filter input,
.>you probably swamped out the internal biases, causing the loop filter to remain
.>more stable curing the locked state.
.>
.>To sumarize: I do not believe the tri-state phase comparator could possibly
.>cause FM of the VCO during a locked state since no signal is present at the
.>output. Therefore, the reference sidebands must have been caused by the
.>loop filter leakage/bias currents themselves perturbing the loop.
.>
.>The MC4044 data sheet, by the way, discusses this very issue, that of
.>loop amplifier bias currents increasing the sideband level.
>---
> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
> * (310) 348-6043 | mine and do not necessarily *
> * Myers@Cypress.West.Sun.Com | reflect those of my employer *
> * This Extra supports the abolition of the 13 and 20 WPM tests *
>

Just a bit more to clarify and correct my original assertions regarding
the PLL when the detector goes to the tri-state mode. In my haste my keyboard
got ahead of my brain. Instead of the reference spurs being a problem during the tri-state
mode I should have been referring to the phase noise inside the loop bandwidth.

In a properly functioning PLL the phase noise of the reference oscillator
is impressed on the VCO inside the loop bandwidth. Not getting into the math of
the process, lets just say that this depends on the loop gain being sufficient to
suppress the VCO noise. Now if the loop gain goes to zero (as when the phase detector
goes tri-state) there is no mechanism for the phase noise characteristics of the
reference oscillator to be transferred to the VCO, thus the output spectra of the
synthesizer has close-in (i.e. within the loop bandwidth) noise characteristics
similar to the unlocked VCO.

By purposely injecting an offset current into the loop amp input one does
create a finite phase offset of the VCO relative to the reference, however this
constant phase offset keeps the phase detector "alive" (not in the tri-state mode)
and allows the loop to operate at its designed loop gain thereby assuring the
phase noise characteristics of the reference oscillator continue to control the
spectra of the VCO. (BTW, I have also seen designs where this is accomplished
by injecting the offset in a pulse-wise fashion rather than as a DC offset).

Any comments or criticism is welcome. I think I am correct in the above
but I know there are synthesizer guru's out there much more knowledgable in this
area than I am.

NEW Subject, (but related):

I have heard it stated that sampling phase detectors only transfer the phase noise of the reference oscillator to the controlled VCO during the time period of the sample pulse, and that between sample pulses the VCO phase noise dominates. In the case of a loop with a high multiplication factor (such as a vhf oscillator controlling a microwave VCO) the 20*Log(N) degradation of the reference phase noise is not impressed on the VCO between sample pulses. There are arguments pro and con on this. Anyone have any salient comments one way or another

---

comments and oppinions are mine alone and not those of my employer

---

/\
\\ \
\ \\ /
/ \/ / / Raymond E. Anderson WB6TPU
/ / \//\ Signal Integrity Engineer
\//\ / / Sun Microsystems
/ / /\ / 2550 Garcia Ave. MS MIL04-16
/ \\ \ Mountain View, CA 94043-1100
\ \\
\/ (408) 276-5224
(408) 263-9512 fax
raymond.anderson@Sun.Com

703. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 16:29:03 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27na4g$6bb@newscast.West.Sun.COM>
Source record: 119320

In article ctg@male.EBay.Sun.COM, raymonda@uranium.EBay.Sun.COM (Ray Anderson) writes:
> In a properly functioning PLL the phase noise of the reference oscillator
>is impressed on the VCO inside the loop bandwidth. Not getting into the math of
>the process, lets just say that this depends on the loop gain being sufficient to
>suppress the VCO noise. Now if the loop gain goes to zero (as when the phase detector
>goes tri-state) there is no mechanism for the phase noise characteristics of the
>reference oscillator to be transferred to the VCO, thus the output spectra of the
>synthesizer has close-in (i.e. within the loop bandwidth) noise characteristics
>similar to the unlocked VCO.
>
> By purposely injecting an offset current into the loop amp input one does
>create a finite phase offset of the VCO relative to the reference, however this
>constant phase offset keeps the phase detector "alive" (not in the tri-state mode)
>and allows the loop to operate at its designed loop gain thereby assuring the
>phase noise characteristics of the reference oscillator continue to control the
>spectra of the VCO. (BTW, I have also seen designs where this is accomplished
>by injecting the offset in a pulse-wise fashion rather than as a DC offset).

I am still not convinced. The only time the phase comparator output is tri-stated
is when the loop is in lock. Any difference in phase between phase comparator
inputs causes the phase comparator output to actively drive the loop filter
towards one of the supply rails. Phase noise, for example, would cause the
phase comparator to exit the "zero gain" state. The only time the phase
comparator is in the "zero gain" state is when both inputs to the loop
are in phase and no change is required. Zero gain times zero difference
gives zero adjustment required.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

704. Wide-band PLL's (was: discussing PLL synthesis)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 16:41:40 UTC
From: geertj@ica.philips.nl
Message-ID: <1993Sep21.164140.6445@ica.philips.nl>
Source record: 119323

stkaba@uta.fi (Kari Back) writes:

>Dana Myers (myers@cypress.West.Sun.COM) wrote:

>: I've built some PLL synthesizers and learned quite a bit in doing so.
>: Is anyone interested in starting a thread about constructing PLL
>: synthesizers for HF and above?

> I would like to join, just now I am planning a 100 to 200MHz VCO
>with binary band switching, and have done small computer program
>determining required inductor and capacitor values.
>It would be interesting see if anyone else has experiences on binary
>band switching .

Be careful. First off, I don't think you are able to do that in one
oscillator, but if you do, you will still have other problems.
Assume you have 10V of voltage sweep on your VCO's input, for 100 MHz
of frequency tuning.
In this case, 1mV of noise will generate 10 kHz of FM deviation.
Now, it's hard to make a VCO input signal noisefree; it is very
easy to have a noise level of about this range.
Not to think about the hum if it's on the bench!
Also, if you use varicaps, much of the capacity in your oscillator
will be from these varicaps, which have a low Q and thus will degrade
the performance of your oscillator.

For much less noise, you might consider using a few oscillators which
have a smaller range, and switch amongst those. Each of them has
less sensivity and performs better in it's range. Don't switch capacitors
or inductors - switch the whole oscillator instead, and use a diode switch
for the HF combination.

Geert Jan

705. Forwarding: VHF UHF transistor types

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 16:51:43 UTC
From: David_Shalita.ES_AE@xerox.COM
Message-ID: <"21-Sep-93..9:51:43.PDT".*.D.R._Shalita.ES_AE@Xerox.com>
Source record: 119321

```
------------------
Date: Monday, September 20, 1993 3:02 pm
To: HAMS-homebrew@ucsd:edu
Copies: David Shalita
Sender: D.R. Shalita
From: David Shalita
Subject: VHF UHF transistor types
Answer to: David Shalita
Text:

To:hams-homebrew@ucsd:edu
Subject: Low cost VHF UHF Transistors

Hello:
I am homebrewing some wireless circuits that need
10 to 100 mw rf output stages, lower level
oscillators and rf amplifiers that operate
from 200 to 1200 mhz.

I am looking for part types and sources for low cost
counterparts at these VHF UHF frequencies of the
2N2222 transistor. Yes I want to buy a bag full of
them for a buck or so. Several transistor types may
be required. A short list of your favorite low cost
FETS, BIPOLAR, BRICKS, MMIC's will very helpful.

I now have the catalogs from MINI Circuits, Mauser and
DIGI-KEY and would appreciate any other suppliers of
small quantities RF VHF UHF parts that homebrewer can
purchase from.

Need the complete name, address, and phone number of
Danny's Small Parts and Kits.

Please include names addresses and phone numbers of sources
you recommend.

Appreciate any help. Thanks, Dave
```

706. Help: modifying a FM 88/108 receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 17:23:12 UTC
From: manfrin@cli.di.unipi.it
Message-ID: <1993Sep21.172312.20179@serra.unipi.it>
Source record: 119322

In the aim to receive other VHF transmissions I tried to modify my cheap
FM 88/108 Mhz receiver. The only remarkable effect is obtained changing the
value of a variable inductor; as you can imagine the result was to
increase the work-range of the radio. With the inductor at maximum value
it's something about 99-119 Mhz. My questions are:

1) It's possible to increase more the range changing the inductor
with another one?

2) It's possible to decrease the range? How? Is there any filter
that cuts non 88/108 Mhz waves?

3) At 119 Mhz I receive the nearest airport's tower of control. Can
you explain me why when an approaching airplane is transmitting
the reception is good, but when the tower's operator speaks the
reception is very bad (it's like the sound was saturated).
May be the the (missing) GAIN control? Or it's because my
receiver is STEREO ?

If someone can help me I will appreciate very much. Thanks in advance,

- Samuele

+----------------------------------+---------------------------------------+
| Samuele Manfrin | Opinions expressed here are of |
| manfrin@cli.di.unipi.it | Elvis Presley |
+----------------------------------+---------------------------------------+

707. Re: Help: modifying a FM 88/108 receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 17:55:39 UTC
From: mcovingt@aisun6.ai.uga.edu
Message-ID: <27nf6r$fro@hobbes.cc.uga.edu>
Source record: 119324

In article <1993Sep21.172312.20179@serra.unipi.it> manfrin@cli.di.unipi.it (Samuele Manfrin) writes:
>In the aim to receive other VHF transmissions I tried to modify my cheap
>FM 88/108 Mhz receiver. The only remarkable effect is obtained changing the
>value of a variable inductor; as you can imagine the result was to
>increase the work-range of the radio. With the inductor at maximum value
>it's something about 99-119 Mhz. My questions are:

Must be minimum value, not maximum, if the frequency is higher.

>1) It's possible to increase more the range changing the inductor
> with another one?
>2) It's possible to decrease the range? How? Is there any filter
> that cuts non 88/108 Mhz waves?

These depend on your radio.

>3) At 119 Mhz I receive the nearest airport's tower of control. Can
> you explain me why when an approaching airplane is transmitting
> the reception is good, but when the tower's operator speaks the
> reception is very bad (it's like the sound was saturated).
> May be the the (missing) GAIN control? Or it's because my
> receiver is STEREO ?

The transmissions from the airport are amplitude modulated (AM), not frequency modulated (FM). The FM demodulator in your radio is not good at handling AM signals, although it may handle very weak ones successfully.

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

708. Source of SI/SD 8901 DMOS FETs

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 19:30:39 UTC
From: kwi@kurp-gw.hut.fi
Message-ID: <KWI.93Sep21193039@kurp-gw.hut.fi>
Source record: 119361

Does anyone know a source (which preferably accepts mail-orders from Europe)
of Siliconics SD/SI 8901 DMOS FETs in small quantities of course :)?
(See QST Feb 93...)

Kaj Wiik OH6EH/2
Kaj.Wiik@hut.fi

--

Helsinki University of Technology, | kwi@vipu.hut.fi |
Metsahovi Radio Research Station | !EID RO EVOM |
Metsahovintie, 02540 Kylmala, Finland | oh6eh@oh2rba.fin.eu |

709. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 21:40:12 UTC
From: linnig@m2000.dseg.ti.com
Message-ID: <LINNIG.93Sep21154012@m2000.dseg.ti.com>
Source record: 119325
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

One approach I was hoping would pan out for muting commercials was to mute them if they are NOT closed-captioned. Alas, from watching a CC set at the local store I was surprised to notice that many commercials are closed-captioned.

However, most locally produced commercials are not CC encoded so you would at least be able to mute some of them.

Almost all tv shows are CC Encoded these days. If you build it I will use it.

-- Mike, N5QAW

- - - - - - - - - - - - - - - - - - + - - - - - - - - - - - - - - - - - - +
Mike Linnig, Texas Instruments Inc. | 97.43% of all statistics are made |
Phone: (214) 575-3597 | up; most of them (83.6 percent) |
Internet: mike.linnig@dseg.ti.com | are wrong. |
- -

710. Crystals...FT 243's...no longer made?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 22:31:52 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep21.223152.14054@cyphyn.radnet.com>
Source record: 119334

The last place where I was able to get FT 243 crystals (real ones) was
at W0LPS...aka CW Crystals.

I sent in an order last month (early on) and I'm beginning to wonder
whats happened.
(Is he ok? Did the order get there? Is he swamped with orders?)

I got xtals there before with only 30 day waits , and such a time is normal
due to what it takes to make em, and it's just him and his wife who do it.
But, here it's getting to be near 60 days...
If he is simply snowed under with orders, I can understand.

I don't have his phone No. to call (and none is given anyway, nor in the
phone directorys)

Anyone know more than I do?

:
--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

711. Cell phone parts for AmRadio?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-21 22:50:23 UTC
From: bwalzer@muug.mb.ca
Message-ID: <1993Sep21.225023.8397@muug.mb.ca>
Source record: 119326

As I was thumbing through my Toko catalog the other day I came across a section called SAW Filters. Apparently Toko makes SAW filters with center freqencies around the 90MHz area with around 30kHz bandwidth. They promise real low group delay. They are intended "for use in the new higher frequency 1st IF stages required by future generations of mobile cellular communications systems". I burned up some long distance and found that Toko wants around $15 for them in 100's. A typical device is SWS92A.

First off, what are these things intended for? If I was to disassemble a typical run of the mill analog cellular phone would I find a filter of this class or are these for TDMA type digital phones? It's occured to me that the components used in cellular phones must be getting inexpensive by now. All the RF components after the first mixer should be wildly useful for building receivers for narrowband voice/data for the higher amateur bands. Could someone who knows what is actually inside typical cellular phones please comment? Oh, and if anyone knows where one would buy such components in experimenter quantities...

Thanks,

Bruce Walzer |Voice: (204) 783-4983
Winnipeg MB |Internet: bwalzer@mona.muug.mb.ca
Canada |AmRadio: VE4XOR

712. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 00:19:41 UTC
From: dxk10@po.CWRU.Edu
Message-ID: <27o5mt$388@usenet.INS.CWRU.Edu>
Source record: 119328

In a previous article, myers@cypress.West.Sun.COM (Dana Myers) says:

>
>I've built some PLL synthesizers and learned quite a bit in doing so.
>Is anyone interested in starting a thread about constructing PLL
>synthesizers for HF and above?
>
>Dana
>

As long as a thread is starting...

I understand how PLLs stay locked. But how do they _get_ locked? Phase error doesn't mean much when the VCO and the incoming signal are of different frequencies.

Anyone?

73,

David
--
David Kazdan, M.D., Ph.D dxk10@po.cwru.edu
Department of Anesthesiology, University Hospitals of Cleveland, Ohio
Amateur Radio: AD8Y

713. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 01:34:53 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep22.013453.10315@ke4zv.atl.ga.us>
Source record: 119327
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <nagleCDoxsn.733@netcom.com> nagle@netcom.com (John Nagle) writes:
>
> Many commercials have codes in the vertical interval used for
>billing, and it may have detected those.

Uh huh, that's why we transmit codes in the vertical interval *all* the time now. :-) In fact, the vertical interval has become a very busy place with coding for various purposes placed there.

If you can decode the signals, you can tell the difference between product codes, program codes, and auxillary control codes, but local commercials normally aren't specially coded so you won't catch those this way. One coding you'll normally find in the vertical interval is SMPTE VITC timecode. If you detect a break in timecode, you may have found a local station break.

Still the best way to detect commercials is to look at the average energy in the audio and video portions of the signal. Commercials still tend to have higher average modulation levels than programming, except for programming like music videos. That's not as consistent as it once was however. Many ad agencies are now using a soft sell technique, example the Levi jeans commercials, where less is more. Besides, the commericals are the best programming TV has to offer with higher production values expended on that 30 seconds that on entire 30 minute programs. Watch and enjoy!

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

714. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 02:02:04 UTC
From: mcovingt@aisun3.ai.uga.edu
Message-ID: <27obms$pa0@hobbes.cc.uga.edu>
Source record: 119329

In article <27o5mt$388@usenet.INS.CWRU.Edu> dxk10@po.CWRU.Edu (David Kazdan Md) writes:
>
>I understand how PLLs stay locked. But how do they _get_ locked? Phase
>error doesn't mean much when the VCO and the incoming signal are of
>different frequencies.

Simple. If they are at different freqs. then the phase error is constantly
varying -- the phase detector output is AC rather than DC, so to speak.
It will swing through a level at which the two signals are in phase.
When it does, *click!*

--
:- Michael A. Covington, Associate Research Scientist : *****
:- Artificial Intelligence Programs mcovingt@ai.uga.edu : *********
:- The University of Georgia phone 706 542-0358 : * * *
:- Athens, Georgia 30602-7415 U.S.A. amateur radio N4TMI : ** *** ** <><

715. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 02:07:33 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep22.020733.10618@ke4zv.atl.ga.us>
Source record: 119330

In article <930921071236@spence> spence_s_wilhelm@ccm.hf.intel.com writes:
>I'm having trouble understanding how superhet recievers filter
>out one sideband of a CW singnal. Is this filtering done by the
>IF filter or a function of the BTO? How does the mechanism work?
>I've read the sections about this in the Handbook and RF Design
>but neither say much about the subject. Can anyone shed some light
>on this subject?

Well I'll give it a shot. Let's assume a typical single conversion
radio with a 9 MHz IF and a desired signal at 14 MHz. To mix the
14 MHz signal to 9 MHz, we could use a 5 MHz local oscillator, or
a 23 MHz LO. Let's assume the traditional 5 MHz LO. Ok, so at the
first mixer we have our desired signal and a bunch of undesired
signals at other frequencies. One signal, at 4 MHz, is called the
"image" frequency. The front end must be selective enough not to
pass this signal to the mixer or it will appear with the desired
signal at the IF of 9 MHz.

The mixing process produces sum and difference frequencies as well
as passing through some of the original frequency energy. So at the
output we have a 5 MHz signal, a 14.0 MHz signal, some other signals
around 14 MHz, the sum signal of 19 MHz, and a difference signal of
9 MHz. The signals far from 9 MHz will be stripped by the selectivity
of the following stage.

Ok, so now we have a group of signals near 9 MHz that were originally
near 14 MHz. For instance, our desired signal is exactly at 9 MHz
while a signal appearing at 14.1 MHz would now be at 9.1 MHz. If
we follow the first mixer with a narrow 9 MHz filter, it will only
pass signals very closely around 9 MHz. Say the filter has a bandwidth
of 500 Hz, then signals further from 9 MHz than +/- 250 Hz will be
attenuated by the filter's characteristic response. So the 9.1 MHz
signal, being 100 kHz away from our desired signal, will be attenuated
by the filter. That's far enough into the filter's stopband that the
signal will be attenuated by at least 60 db. Closer signals will be
attenuated less as the filter's slope rises. Signals 250 Hz away will
be attenuated 6 db. The shape factor of a filter is the ratio of the
6 db to 60 db response points. A filter with a better shape factor
has steeper "skirts". That is, the 6 db and 60 db points are closer
together. For "single signal" reception, we want the shape factor
to approach 1 as closely as possible.

Now the IF bandpass will be amplified and passed to the second mixer,
or detector stage. Here it's mixed again, this time with a LO near
9 MHz, say 8.9993 MHz. The resultants are at an audio frequency of 700 Hz,

the difference frequency, and at 9.0007 MHz, the sum frequency. The latter will be stripped by the low pass filter at the beginning of the audio amplifier. The audio amp will now boost our desired signal to the point where we hear it.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

716. Re: Help: modifying a FM 88/108 receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 02:29:19 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep22.022919.10751@ke4zv.atl.ga.us>
Source record: 119331

In article <1993Sep21.172312.20179@serra.unipi.it> manfrin@cli.di.unipi.it (Samuele Manfrin) writes:
>In the aim to receive other VHF transmissions I tried to modify my cheap
>FM 88/108 Mhz receiver. The only remarkable effect is obtained changing the
>value of a variable inductor; as you can imagine the result was to
>increase the work-range of the radio. With the inductor at maximum value
>it's something about 99-119 Mhz. My questions are:
>
>1) It's possible to increase more the range changing the inductor
> with another one?

Yes. A smaller inductor will give more tuning range as the tuning capacitor begins to dominate the L/C ratio.

>2) It's possible to decrease the range? How? Is there any filter
> that cuts non 88/108 Mhz waves?

Yes, you can increase the size of the inductor. That will make the fixed inductor begin to dominate the L/C ratio. You can also, of course, use a filter to restrict the range of signals reaching the first mixer.

>3) At 119 Mhz I receive the nearest airport's tower of control. Can
> you explain me why when an approaching airplane is transmitting
> the reception is good, but when the tower's operator speaks the
> reception is very bad (it's like the sound was saturated).
> May be the the (missing) GAIN control? Or it's because my
> receiver is STEREO ?

Aircraft transmissions are AM. An FM detector is insensitive to AM due to the limiting action of the IF stage, and the nature of the discriminator. If the signal is weak, the limiter won't fully reach saturation, and if your radio uses a ratio detector, you will get some detected audio from an AM signal. So you'll hear weak signals fairly well, but stronger signals will saturate the limiter which will strip their amplitude variations so you won't get understandable audio.

Many newer FM radios use an IC as limiter and detector. Some of these chips have a RSSI output. This is the signal strength drive for an "S" meter. You can modify the radio so that this output, less it's normal low pass filter, feeds the audio stages instead of the FM detector output. This will give you good AM detection. Or you can replace the entire limiter/detector circuit with a simple diode detector.

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

717. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 04:34:13 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <27okk5$1rg@cc.tut.fi>
Source record: 119332

Dana Myers (myers@cypress.West.Sun.COM) wrote:

> Phase noise, for example, would cause the
> phase comparator to exit the "zero gain" state. The only time the phase
> comparator is in the "zero gain" state is when both inputs to the loop
> are in phase and no change is required.

Maybe this is a kind of "cross-over" distortionand it depends how the
phase detector defines _lock state_. The phase comparator remains
in "zero gain" (off state) for small phase differences (produced
by phase noise in the VCO). When the phase difference gets too large,
the output is suddenly switched to the "linear" state and the loop
suddenly starts to (over)compensate for the phase difference that
had accumulated during the "zero gain" state.

By injecting a small current, the output is constanly in the linear
region and it is not constantly jumping in or out between the linear
state and the off-state.

Paul OH3LWR

718. Re: Cell phone parts for AmRadio?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 04:50:40 UTC
From: nagle@netcom.com
Message-ID: <nagleCDqo4H.1AC@netcom.com>
Source record: 119333

[you mean Ham Radio, not AM radio, right? JN]

bwalzer@muug.mb.ca (Bruce Walzer) writes:
>As I was thumbing through my Toko catalog the other day I came across a
>section called SAW Filters. Apparently Toko makes SAW filters with center
>freqencies around the 90MHz area with around 30kHz bandwidth. They promise
>real low group delay. They are intended "for use in the new higher frequency
>1st IF stages required by future generations of mobile cellular
>communications systems". I burned up some long distance and found that Toko
>wants around $15 for them in 100's. A typical device is SWS92A.
>First off, what are these things intended for? If I was to disassemble a
>typical run of the mill analog cellular phone would I find a filter of this
>class or are these for TDMA type digital phones?

Those are still somewhat exotic components, not something the
typical cell phone of today has. Current technology seems to be
ceramic filters and IF cans, like an ordinary FM radio, which, after
all, is all a cell phone is. Don't know about Qualicomm's new
spread spectrum units, though, which should have some nice parts for
the spread-spectrum crowd.

>It's occured to me that the
>components used in cellular phones must be getting inexpensive by now. All
>the RF components after the first mixer should be wildly useful for building
>receivers for narrowband voice/data for the higher amateur bands. Could
>someone who knows what is actually inside typical cellular phones please
>comment?

Yes, ICs designed for cell phones are useful in many RF applications.
They're cheap, they're good, and they're small. Sometimes too small;
some parts are available only in shrink-surface-mount, which makes for
difficult assembly, But most are available in DIP form, even if that
isn't the volume part.

Signetics makes a chip set for cellular phones, which includes the
following generally useful parts:

TDA7052 1-watt audio power amp
NE/SA605 Mixer (NE602-type) plus IF system and FM detector.
Good component
for receiver-building. I've used one for a laser
rangefinder. Available in DIP or surface mount.
NE/SA5750 Audio processor - companding, etc. A useful
general-purpose component for 2-way radios.
Does VOX, noise cancellation, compressing,
expanding, and provides a headphone/speaker drive amp.

Strictly an analog part. Available in DIP or
surface mount.
NE/SA5751 Audio processor - control part. I2L bus interface
controlling various functions. Designed to
control NE/SA5750. Could be useful for ham
portables. Generates TouchTones, too.
DIP or surface mount.

There's also a collection of frequency synthesizer parts available, and
a "junk chip" for everything that didn't logically fit somewhere else.
The Signetics RF databook gives the details. If you wanted to build
a ham VHF tranceiver, these would be a good place to start.

John Nagle

719. Re: Wide-band PLL's (was: discussing PLL synthesis)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 11:30:08 UTC
From: stkaba@uta.fi
Message-ID: <27pd00$ah9@vuokko.uta.fi>
Source record: 119335

Geert Jan de Groot (geertj@ica.philips.nl) wrote:
: stkaba@uta.fi (Kari Back) writes:

: >Dana Myers (myers@cypress.West.Sun.COM) wrote:

: >: I've built some PLL synthesizers and learned quite a bit in doing so.

: > I would like to join, just now I am planning a 100 to 200MHz VCO
: >with binary band switching, and have done small computer program
: >determining required inductor and capacitor values.

: Be careful. First off, I don't think you are able to do that in one
: oscillator, but if you do, you will still have other problems.
: In this case, 1mV of noise will generate 10 kHz of FM deviation.
: Now, it's hard to make a VCO input signal noisefree; it is very
: easy to have a noise level of about this range.
: Not to think about the hum if it's on the bench!

Ok, thank for the comments,

... the VCO was really intended to be one oscillator for this range, but
it is divided in four frequency bands with binary controlled diode swithing
that set the required inductors and fixed capacitors for each band.
The tuning slope Mhz/V is (should be) therefore lower, 2.2MHz/V for each
25MHz span.
Will see after next few weeks...
...

Have anyone experienced with strip-line inductors on PCB-board, what the
Q could be on glass-epoxy boards ?.
And size of 80 nH inductor ?.

Kari

720. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 15:05:01 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <27ppit$2fa@news.acns.nwu.edu>
Source record: 119336

In article <1993Sep22.020733.10618@ke4zv.atl.ga.us>,
Gary Coffman <gary@ke4zv.UUCP> wrote:

Just a few random additions to Gary's nice explanation:

A couple of paragraphs describing the first LO and mixer have
been deleted for brevity.

>Ok, so now we have a group of signals near 9 MHz that were originally
>near 14 MHz. For instance, our desired signal is exactly at 9 MHz
>while a signal appearing at 14.1 MHz would now be at 9.1 MHz. If
>we follow the first mixer with a narrow 9 MHz filter, it will only
>pass signals very closely around 9 MHz. Say the filter has a bandwidth
>of 500 Hz, then signals further from 9 MHz than +/- 250 Hz will be
^^^^^^^^^^^^^^^^^^^^
>attenuated by the filter's characteristic response. So the 9.1 MHz
>signal, being 100 kHz away from our desired signal, will be attenuated
>by the filter. That's far enough into the filter's stopband that the
>signal will be attenuated by at least 60 db. Closer signals will be
>attenuated less as the filter's slope rises. Signals 250 Hz away will
>be attenuated 6 db. The shape factor of a filter is the ratio of the
>6 db to 60 db response points. A filter with a better shape factor
>has steeper "skirts". That is, the 6 db and 60 db points are closer
>together. For "single signal" reception, we want the shape factor
>to approach 1 as closely as possible.
>

Usually, for sidband reception, the filter is set to let the
desired sideband thru and stop the rest. In better receivers,
the LO frequency is affected by choice of USB or LSB so that
the receiver (first LO) does not have to be re-tuned to receive
the other sideband. The display always reads the frequency
(subject to equipment tolerance) of the suppressed carrier.

Rajiv
aa9ch
r-dewan@nwu.edu

721. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 15:11:52 UTC
From: glenne@sad.hp.com
Message-ID: <CDrGvt.1K8@srgenprp.sr.hp.com>
Source record: 119337

Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
: In article <27o5mt$388@usenet.INS.CWRU.Edu> dxk10@po.CWRU.Edu (David Kazdan Md) writes:
: >
: >I understand how PLLs stay locked. But how do they _get_ locked? Phase
: >error doesn't mean much when the VCO and the incoming signal are of
: >different frequencies.

: Simple. If they are at different freqs. then the phase error is constantly
: varying -- the phase detector output is AC rather than DC, so to speak.
: It will swing through a level at which the two signals are in phase.
: When it does, *click!*

Not so simple if the signal is originally further away than the loop
bandwidth. In that situation it won't just "click" in.
Many PLL phase detectors are also phase/frequency detectors and provide
a corrective DC component for the unlocked situation.

Glenn Elmore n6gn

N6GN @ K3MC
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

722. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 16:54:42 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep22.165442.29209@kocrsv01.delcoelect.com>
Source record: 119349

In article <930921071236@spence>, swilhelm@[128.215.114.181] (Spence Wilhelm) writes:
> I'm having trouble understanding how superhet recievers filter
> out one sideband of a CW singnal. Is this filtering done by the
> IF filter or a function of the BTO? How does the mechanism work?
> I've read the sections about this in the Handbook and RF Design
> but neither say much about the subject. Can anyone shed some light
> on this subject?
>
> --
> Spence Wilhelm KB7TCY Intel Corporation
> (602)554-5050 5000 W Chandler Blvd
>

What superhet filters-out one of the sidebands? What sidebands?
==== =========== ====

(yeah, yeah, I know CW generates sidebands, dependant upon the
waveshaping of the xmtr and the code speed, etc., but they are
typically so narrow they look like a "spike" on a spectrum analyzer).

--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

723. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 17:00:49 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Sep22.170049.29401@kocrsv01.delcoelect.com>
Source record: 119350

>
> Usually, for sidband reception, the filter is set to let the
> desired sideband thru and stop the rest. In better receivers,
> the LO frequency is affected by choice of USB or LSB so that
> the receiver (first LO) does not have to be re-tuned to receive
> the other sideband. The display always reads the frequency
> (subject to equipment tolerance) of the suppressed carrier.
>
> Rajiv
> aa9ch
> r-dewan@nwu.edu

Unless I mis-read the original post, the question had to deal with the supression of a CW signal's sidebands . . . which tranditionally isn't done! ====

--

James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

724. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 17:52:22 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27q3cm$b2a@newscast.West.Sun.COM>
Source record: 119339

In article 1rg@cc.tut.fi, k23690@lehtori.cc.tut.fi (Kein{nen Paul) writes:
>
>Dana Myers (myers@cypress.West.Sun.COM) wrote:
>
>> Phase noise, for example, would cause the
>> phase comparator to exit the "zero gain" state. The only time the phase
>> comparator is in the "zero gain" state is when both inputs to the loop
>> are in phase and no change is required.
>
>Maybe this is a kind of "cross-over" distortionand it depends how the
>phase detector defines _lock state_. The phase comparator remains
>in "zero gain" (off state) for small phase differences (produced
>by phase noise in the VCO). When the phase difference gets too large,
>the output is suddenly switched to the "linear" state and the loop
>suddenly starts to (over)compensate for the phase difference that
>had accumulated during the "zero gain" state.

The phase detector under discussion (actually a phase/frequency detector)
makes decisions based on the rising edges of both inputs. As a result, the
output of the phase detector, in a locked loop, will be active roughly
once every cycle of the reference frequency. Furthermore, the output of
the phase detector has exactly three states; a digital 1, a digital 0, and
a high-Z state. When the leading edge of the reference comes before the
leading edge of the VCO, the output of the phase detector switches to a
digital 1 until the leading edge of the VCO comes. When the leading edge
of the VCO comes before the leading edge of the reference, the phase detector
switches to a digital 0 until the reference edge occurs. When the two signals
are both the same, the output is in a high-Z state.

There is no "linear" state; the phase detector simply decides if the
VCO needs to increase, decrease or stay the same in frequency. The phase
detector indicates the magnitude of change required by the duration of the
output pulses.

This whole notion that the phase detector loses control of the loop
is a red herring. The phase detector is always in control of the loop.
If the phase detector does not believe that a change is required in the
VCO, then he does his best not to change the VCO by disabling any voltage
change to the loop filter.

The sensitivity of the phase detector to small differences in phase,
as far as I can tell, is tied to the propagation delay of the phase
detector. In general, the propagation delay is quite small when
compared to the average reference frequency. I'll look at the data book
and comment on this later, but I suspect the time it takes the phase

detector to make a decision once a phase difference occurs is insignificant when compared the the reference frequency and loop filter bandwidth.

>By injecting a small current, the output is constanly in the linear
>region and it is not constantly jumping in or out between the linear
>state and the off-state.

As I mentioned above, there is no linear state in the output. It is either "go up in frequency", "go down in frequency" or "don't change".

Any time you inject a current which perturbs the loop, the VCO will require more frequent adjustment and the reference sideband energy will increase. Period. If injecting current into the loop filter cancels out some undesired bias or leakage current, you may see the sideband energy decrease. Every time the phase detector output changes from a high-Z state to a 1 or 0, it causes the VCO to change in frequency, which frequency modulates the VCO, which increases the reference sidebands due to (you guessed it!) frequency modulation. Causing the phase detector to make more frequent or larger changes in the VCO will always result in increased sidebands.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

725. Re: Crystals...FT 243's...no longer made?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 18:02:07 UTC
From: kstuart@oasys.dt.navy.mil
Message-ID: <44032@oasys.dt.navy.mil>
Source record: 119338

Just as a point of information, JAN Crystals in Fort Myers, Fla. had
FT-243 crystals as a line item in their 1992 catalog. Price was
$8.00 plus $0.50 shipping ($10.00 minimum order).

For current info, their number is 1-800-JAN-XTAL.

Ken Stuart, W3VVN

726. Re: Forwarding: VHF UHF transistor types

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 19:00:30 UTC
From: alanb@sr.hp.com
Message-ID: <CDrrGv.4px@srgenprp.sr.hp.com>
Source record: 119341

David_Shalita.ES_AE@xerox.COM (David_Shalita.ES_AE@xerox.COM) wrote:

: I am homebrewing some wireless circuits that need
: 10 to 100 mw rf output stages, lower level
: oscillators and rf amplifiers that operate
: from 200 to 1200 mhz.
:
: I am looking for part types and sources for low cost
: counterparts at these VHF UHF frequencies of the
: 2N2222 transistor.

The good ol' 2N5179 is a good standby VHF/UHF bipolar transistor.
For higher power the 2N5109 in a TO-5 case has similar specs. They
both have an Ft of around 1 GHz as I recall.

A good low-noise JFET is the J310 (plastic package) or U310 (metal can).
Makes an excellent grounded-gate amp with a decent match to 50 ohms on
the source input.

The MSA-series VHF/UHF amplifiers from Avantek and HP are very easy
to use since they have 50-ohm inputs and outputs. Versions are available
with various noise figures and power levels. The MSA-0686 is spec'd
at 16.5 dB gain, 2 dB noise figure, 2 dBm output and 800 MHz bandwidth.
The MSA-0486 has 7 dB gain, 7 dB NF, +12.5 dBm output and 3.2 GHz
bandwidth.

AL N1AL

727. Re: Help: modifying a FM 88/108 receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 19:05:16 UTC
From: alanb@sr.hp.com
Message-ID: <CDrrou.4u2@srgenprp.sr.hp.com>
Source record: 119342

Gary Coffman (gary@ke4zv.atl.ga.us) wrote:
: In article <1993Sep21.172312.20179@serra.unipi.it> manfrin@cli.di.unipi.it (Samuele Manfrin) writes:
: >1) It's possible to increase more the range changing the inductor
: > with another one?

: Yes. A smaller inductor will give more tuning range as the tuning capacitor
: begins to dominate the L/C ratio.

The tuning ratio is determined by the ratio of minimum to maximum capacitance. Changing the inductor will move the center frequency up or down, but the ratio of min to max frequency will remain the same.

: >2) It's possible to decrease the range? How? Is there any filter
: > that cuts non 88/108 Mhz waves?

: Yes, you can increase the size of the inductor.

To decrease the range, you want more fixed capacitance and less variable capacitance. One way to do this is to add a large fixed capacitor in parallel and then make the inductor smaller to bring the tuning range back into the same band you started with.

AL N1AL

728. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 19:42:42 UTC
From: clifto@indep1.UUCP
Message-ID: <2489@indep1.UUCP>
Source record: 119348

I've thought for a long time about synthesizing my old Sears-su rock-bound unit, which has a VFO input. Sat down and did a little math, and the design seems pretty straightforward; oscillators are in the 10-13 MHz range, etc. The only problem I foresee is that tuning would require the VCO to change frequencies at 833.3 Hz intervals, meaning to me that somewhere in the chain, no matter how I design it, I'd end up using an 833.3 Hz frequency standard.

That's not hard to produce, even with extreme accuracy; we have a local AM station at 1000 KHz that I could phase-lock to for a frequency standard and then divide down. My question is, how effectively is this system going to lock and hold a locked condition with such a low frequency as the standard? Seems to me lock would be slow (not good when going from xmit to rcv) and not necessarily very stable.

--

+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

729. high speed datalink

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 21:15:30 UTC
From: electro@matt.ksu.ksu.edu
Message-ID: <27qf9iINNsl4@matt.ksu.ksu.edu>
Source record: 119345
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

```
Does anyone have plans, or know where to get plans for a
high speed 1.2 - 2.4G 1Mb/s (or faster) datalink? Preferably
ethernet interface, but I'll take any other interface.
Thanks
--
Eric Patterson -- electro@wiz.eece.ksu.edu -- N0SJW
```

730. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 22:48:44 UTC
From: hale@btree.uucp
Message-ID: <1993Sep22.224844.26303@btree.uucp>
Source record: 119340
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <27lksv$99@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>Sorry, to shoot you down Randy, but there is no clear and definite way
>to detect commericals. Each network and cable company has varying
>technical people and delivery of the signal is almost allways different.

Sure there is. Pattern recognition.

You can build a device which will extract the relevant parameters
from the video and/or audio and will compare those computed parameters
to stored parameters. When they match within some allowed fuzz band
then your output goes true and when they cease to match then the
output goes false. The output can mute the audio, blank the video,
pause the VCR, or do whatever you wish (generate a letter to the
advertiser?).

You have to teach the system which inputs are to be recognized.
Therefore each new commercial will get through until your train
the system. That's probably a reasonable thing to do.

Why don't people do this now? Cost. Such a system would be well
into the multiples of $10K with present day technology. However,
at the rate that technology advances, these systems will be affordable,
at least to the luxury buyer, in 10 years.

Bob Hale ...!ucsd!btree!hale
...!hale@brooktree.com (preferred)

731. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-22 23:29:09 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep22.232909.17007@ke4zv.atl.ga.us>
Source record: 119347

In article <27ppit$2fa@news.acns.nwu.edu> rdewan@casbah.acns.nwu.edu (Rajiv Dewan) writes:
>
>Usually, for sidband reception, the filter is set to let the
>desired sideband thru and stop the rest. In better receivers,
>the LO frequency is affected by choice of USB or LSB so that
>the receiver (first LO) does not have to be re-tuned to receive
>the other sideband. The display always reads the frequency
>(subject to equipment tolerance) of the suppressed carrier.

I centered the filter to keep the numbers nice and round, but
I'm not sure I like radios that offset the LO when I change
modes anyway. When I tune the band I don't think that way,
probably due to my sliderule dial past.

There are three approaches that I know about. In one, the
filter center is the indicated frequency. In another the
LO is offset as described. And in the last, two filters
are used and the LO is left alone. This has a couple of
nice features. First the filter symmetry can be optimized
for the particular sideband, and second there's the bonus
of allowing ISB reception if a second set of IF amps and
detector are supplied.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

732. Like to see these kits

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 00:16:14 UTC
From: MUSCHINSKE%39A.DEcnet@SCFE.CHINALAKE.NAVY.MIL
Message-ID: <00972EF4.A47D92E0.23240@SCFE.CHINALAKE.NAVY.MIL>
Source record: 119343

A good chip for FM reception is the Signetics TDA 7000. I have built a few receivers using this chip. It works well as long as you don't want to go much above the FM broadcast band. Performance at 30 MHz IF frequencies was superb.

BTW, where can you get small orders of the MC3362? Also does anyone know where you can get the TDA7000 these days?

73, Erich KA6AMD @ WA6YBN.#SOCA.CA.USA.NA
Internet: muschinske%39a.decnet@scfb.chinalake.navy.mil

733. Ni-Cad charging question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 00:29:33 UTC
From: graemem@acci.com.au
Message-ID: <9309230026.AA25058@koonda.acci.com.au>
Source record: 119344

In the magazine Electronics Australia (Oct 91 & Mar 92) there were two
articles by James Moxham titled "Longer Life for Ni-Cads"

In the second article he gave a circuit for charging nicads using biased
AC rather than DC. In this circuit the nicad is alternatively
charged at .1C and discharged at .025C

Does anyone have any comments on my conclusion that I should charge
for 37 hours instead of 14

My reasoning is thus
Charge duty cycle 50%
charge current .1C
discharge duty cycle 50%
discharge current .025C

effective charge = 50% of .1C - 50% of .025C
= (3/8) of .1C

therefore charging time should be = (8/3) of 14 hours
= aprox 37 hours

Thanks in anticipation

Graeme Moss
VK3JUD
graemem@acci.com.au

734. RESPONSE to FT411e vox and Nasa-mics. etc..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 02:09:22 UTC
From: ahall@ux4.cso.uiuc.edu
Message-ID: <27r0gi$cp0@vixen.cso.uiuc.edu>
Source record: 119346

Hello everyone,

I finally got around to this, however I should probably be
studying right now (but this'll be kept between you and I right?).
Well, I basically asked three questions in the space of 1 week and
I was able to come up w/ these answers thanks to many of you out
there!

******1) How do I make my ft411E vox work w/o buying the YH-2 headset?
(I asked this because I ride and a headset doesn't fit too well under
a helmet)
(a)...unfortunately I don't know who gave this info to me, but here
it is: You can use a radio shack electret mike-element (I used a
1kohm resistor in line w/ the center conductor of my jack (that'sa
because they use some type of pre-amp in the one that I bought- it
regulates the input voltage to the mic-element- don't ask me, I just
did it and it works :) There are two different mic-elements for sale,
I used the experiment (pc-board style) element (the one w/ only 2
leads). and I was able to make something w/ this, but for that
I'd like you to read on...
(b)...I was reminded of the in the ear mics that work off of inner-
ear noise (which would work well for my bike, but not for vox)

******2)Info on the headsets that NASA uses in their control room??
(a)...They are made by Plantronics- a good source for them is from
an aviation mail-order shop in OH (suprise! they have another good
use!):
Sporty's Pilot Shop
Clermont Co. Airport
Batavia, OH 45103-9747
or call 1-800-543-8633 and ask for their catalog (you might have
to specify communications- apparently they have a couple of
catalogs)
I called them and recieved their catalog, a lot of interesting stuff,
but didn't feature the headset I was looking for. I had also heard
from a number of people that they are in the $200 range :(
(b)...a source for telephone accessories:
"Hello Direct" (no given 800#, but you could ask the 800-info
number about them)
(c)...Heil makes a nice headset but wouldn't work under a helmet
(d)...use the inner-ear mic-ear peice
(e)...there are bone-conducting mics (pricey and not yet easy to find)
(f)...ask Steve Roberts N4RVE (but I think he's gone sailing)
(g)...go to Japan- they sell all sorts of headsets :)
(h)...the nice Plantronics one is the Telex Airman 750 headset

approx. $200

******3)Does anyone know of the group for bycicling hams??
(a)...(please excuse the typo above!)
Bicycling Mobile Hams of America
send SASE to:
BMHA
Box 4009,
Boulder CO
80306
for a sample of their newsletter and membership info. They
hold a net on 14.253mHz 2230UTC on the 1st and 3rd Sunday of the

month. Contact: Hartley Alley, NA0A on packet:NA0A@WA8ZIA.CO

Well, that should do it for those three questions...
As for what I did w/ my VOX on the FT411e (I haven't tried this under
riding conditions yet- might be too windy)
********I used the radio-shack element (thanks to the unknown ham) wired
the way I said above and their earpiece to make a boom mike. For the
boom, I used 12 gauge wire w/ very small wire going from the mike-element
down the boom to the earpiece, all secured w/ heat shrink. Then bent the
12 gauge around the back of the ear and then did some fidling w/ some stiff
wire my mother used for making wreaths @ x-mas, to hold on the ear-piece.
then kinda made things look nice and lead a 3 element wire from the boom
stuff to the connectors for the rig. I used some left over computer multi-
conductor wire (from DB-9 connectors) which was quite small and flexible.
I rigged up the connectors for the rig w/ some wire and plastic-welder
glue so that it would make a 2-jack type plug (similar to the Yaesu plugs)
so that I would only have to fit one 2-jack plug into the rig. As far
as the rest goes, I wired both the grounds for the mic and earpiece togehter
on one conductor and the other go to the center-conductors on the jacks.
As far as how good this thing looks and works is kinda up to you, if
you spend some time @ it, you can make it pretty sturdy. However,
someone pointed out that the Plantronics-style headset doesn't stay on
too well. Oh, by the way you should find that you can use this
home-made earpeice-boom-mic both on the ft411e vox and also w/ just the
PTT button on the rig- (two headsets in one!- and my total was only
$6.00 dollars -> $1.20 for the mic-element, $1.36 for the earpiece, some
scrap wire hanging around the club and the rest for glue and stuff), so
sounds a bit better than $200, but it might not look as nice, but I've
been told that the response on the mic-element is louder, and maybe even
better than my rig's mic- go figure!

Well, good luck w/ it and this was all done thanks to these people:
Ted Cline
Frank
Paul Marsh
Ted Zateslo
Cantrell
Mark

Greg
Michael Dodson
Alan
Dave
and a few that I accidentally erased while I figured out
how to print out all this excellent info!

Thanks again to everyone who replied!!! I can e-mail this thing
to you if you want, but as far as intricate explanations goes,
I'm kinda crunched for time- but wouldn't hurt to ask if you like.
And as always, I enjoy hearing your input...

73's et CUL!!!
Allen n9rzc

email to: n9rzc@uiuc.edu

735. 2.4 GHz w/ MGF-1412 GaAs FETs

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 09:37:16 UTC
From: crawford@eleceng.uct.ac.za
Message-ID: <crawford.43.748777036@eleceng.uct.ac.za>
Source record: 119352

In the ARRL Amateur Radio handbook, there are pre-amp projects using the
Mitsubishi GaAs FET series up to 1.2 GHz.

Has anyone seen an article using this FET for 2.4 GHz?

Thanks in advance for any replies.
--
Brian Crawford KL7JDQ/ZS1 Phone: +27 21 650 3467/Fax: 3465 /-----_
University of Cape Town Email: crawford@eleceng.uct.ac.za <__ >
Dept. Electrical Engineering crawford@comgate.ee.uct.ac.za \ /
Rondebosch 7700, South Africa `*-'

736. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 09:41:44 UTC
From: swilhelm@[128.215.114.181]
Message-ID: <930923094144@spence>
Source record: 119354

In article <CDtAvJ.93s@odin.corp.sgi.com> adams@chuck.dallas.sgi.com (Charles Adams) writes:

>stuff deleted
>
> Take a superhet receiver and tune across a carrier signal, like
> CW with no keying. Why do we loose the signal to one side of the carrier
> frequency with a properly aligned receiver with good supression,
> i.e. rejection, on the opposite side. If I may attempt artwork,
>
>
>
> *
> * *
> * *
> * *
> * *
> * *
> __________|________ | marks the carrier frequency, f(0)
>
>
> for a properly operating superhet receiver, you get something like
>
>
> *
> **
> * *
> * *
> * *
> * *
> ___________|_________
>
>
> the first graph is the response you get with a DC (direct conversion)
> receiver and the second is what you get with a SuperHet receiver.
>
> Is the question, why the above response? Do you want to see the mathematics
> and description of same? Someone pick the level of discussion desired.
>
> de chuck k5fo dit dit

Thanks Chuck for helping me get to the heart of my original question.

The question is how does the superhet receiver cut off half of the CW carrier and present information as depicted in your second picture. I

understand how IF filtering and BTO mixing can cut off half of the signal when the signal is centered in the IF passband. But, how does it work if the signal is not centered in the IF passband?

Please let me know if there is a good text discussing this subject.

--
Spence Wilhelm KB7TCY Intel Corporation
(602)554-5050 5000 W Chandler Blvd

737. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 13:48:46 UTC
From: jjw@seastar.org
Message-ID: <CDt7pB.3yy@seastar.org>
Source record: 119367

In light of something mentioned earlier, it seems I may need to re-think an idea I've had about using a DDS to control a PLL. What I had intended was to have the DDS cover, say, 4.5 to 7.5 MHz, and use a divide-by-10 in the loop to make the VFO cover from 45 to 75MHz in still less than 1Hz steps.
However, as mentioned in another posting, every time the phase detector sees a difference in phase it will send out a 1 or 0, resulting in phase noise from FMing. I had hoped that, by using such a high reference frequency I could have a very low phase noise PLL.
I had planned to use the venerable old 4044 for a phase detector (I found a *bunch* of them at a hamfest for $0.50 ea :-) with a commercial VCO, possibly two or three VCOs (if I include 6 meters and 2 meters).
I have done a similar thing in the past, slaving a 4024 VCO to a 4044 detector using a homebuild DDS board. I didn't really understand from the books how to do it with a variable reference frequency, so I picked someplace near the middle of my range and tried it. It worked, in that the output was 100x the reference and it would lock up fairly fast, but I had no way to measure the signal's width at the time and have since dismantled most of it.
Any help would be appreciated. -->jjw n9jzw

--
John Welch, N9JZW

738. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 14:09:04 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <27sam0$2ec@news.acns.nwu.edu>
Source record: 119351

In article <1993Sep22.232909.17007@ke4zv.atl.ga.us>,
Gary Coffman <gary@ke4zv.UUCP> wrote:

>There are three approaches that I know about. In one, the
>filter center is the indicated frequency. In another the
>LO is offset as described. And in the last, two filters
>are used and the LO is left alone. This has a couple of
>nice features. First the filter symmetry can be optimized
>for the particular sideband, and second there's the bonus
>of allowing ISB reception if a second set of IF amps and
>detector are supplied.

The last of the methods is interesting but is in the heap of
clippings after cost cutting by manufacturers. I have found
asymmetric filters (sharper cut off on the carier side) at
ham fests. They are marked "9MHz USB" or some such. I do
not know of any main stream ham radio gear manufacturer that
does that today. They probably would be nice for modulation,
i.e. for fitering if that is the method used for ssb generation.

Rajiv
aa9ch
r-dewan@nwu.edu

739. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 14:57:19 UTC
From: adams@chuck.dallas.sgi.com
Message-ID: <CDtAvJ.93s@odin.corp.sgi.com>
Source record: 119353

In article <1993Sep22.165442.29209@kocrsv01.delcoelect.com>,
c2xjcb@kocrsv01.delcoelect.com (James Bach) writes:
|>
|> In article <930921071236@spence>, swilhelm@[128.215.114.181] (Spence Wilhelm) writes:
|> > I'm having trouble understanding how superhet recievers filter
|> > out one sideband of a CW singnal. Is this filtering done by the
|> > IF filter or a function of the BTO? How does the mechanism work?
|> > I've read the sections about this in the Handbook and RF Design
|> > but neither say much about the subject. Can anyone shed some light
|> > on this subject?
|> >
|> > --
|> > Spence Wilhelm KB7TCY Intel Corporation
|> > (602)554-5050 5000 W Chandler Blvd
|> >
|>
|> What superhet filters-out one of the sidebands? What sidebands?
|> ==== ========== ====
|>
|> (yeah, yeah, I know CW generates sidebands, dependant upon the
|> waveshaping of the xmtr and the code speed, etc., but they are
|> typically so narrow they look like a "spike" on a spectrum analyzer).
|>
|> --
|> James C. Bach Ph: (317)-451-0455 The views & opinions exp..
|> Advanced Project Engr. GM-NET: 8-322-0455 herein are mine al...
|> Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored,...
|> Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

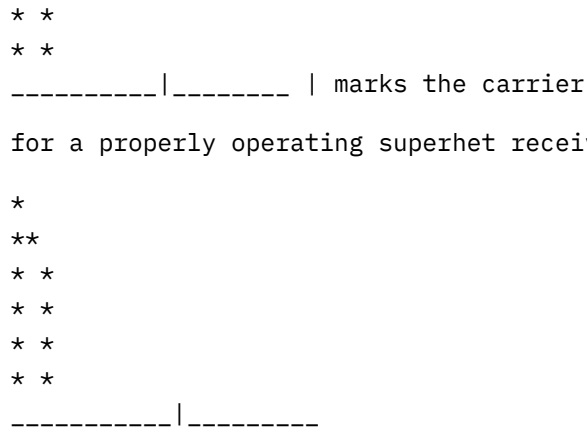
James,

sorry about the filtering on your signature. trying to keep it to 80 chars
across with the News reader additions. geeez. IBM 80 column cards are still
around, we just do it electronically. :-)

I think the question here is the following.

Take a superhet receiver and tune across a carrier signal, like
CW with no keying. Why do we loose the signal to one side of the carrier
frequency with a properly aligned receiver with good supression,
i.e. rejection, on the opposite side. If I may attempt artwork,

*
* *
* *
* *



for a properly operating superhet receiver, you get something like

the first graph is the response you get with a DC (direct conversion)
receiver and the second is what you get with a SuperHet receiver.

Is the question, why the above response? Do you want to see the mathematics
and description of same? Someone pick the level of discussion desired.

de chuck k5fo dit dit

740. transverter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 16:56:35 UTC
From: phil@math.scarolina.edu
Message-ID: <phil.748803395@bigcheese>
Source record: 119359

I just finished building the Down East Microwave 70cm -> 10 mtr
LO and RX brds (haven't finished the TX brd yet). Any recommendations
about a good preamp to use with it? I'm going to use it
for the PACSAT downlink.

-phil AD4FH

741. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 17:30:27 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27smfj$q17@newscast.West.Sun.COM>
Source record: 119355

In article 2489@indep1.UUCP, clifto@indep1.UUCP (Cliff Sharp) writes:
>
> I've thought for a long time about synthesizing my old Sears-su rock-bound
>unit, which has a VFO input. Sat down and did a little math, and the design
>seems pretty straightforward; oscillators are in the 10-13 MHz range, etc.
>The only problem I foresee is that tuning would require the VCO to change
>frequencies at 833.3 Hz intervals, meaning to me that somewhere in the
>chain, no matter how I design it, I'd end up using an 833.3 Hz frequency
>standard.

Yeah, but not necessarily.

> That's not hard to produce, even with extreme accuracy; we have a local
>AM station at 1000 KHz that I could phase-lock to for a frequency standard
>and then divide down. My question is, how effectively is this system going
>to lock and hold a locked condition with such a low frequency as the
>standard? Seems to me lock would be slow (not good when going from xmit
>to rcv) and not necessarily very stable.

You don't need to phase lock to some external standard; none of my PLL radios
do. The normal approach is to use a crystal oscillator to provide a standard
frequency. The oscillator normally runs in the 6-10 Mhz range; many synthesizer
schemes make use of the timebase oscillator as the second local oscillator in
a dual-conversion receiver. The oscillator is divided down to whatever your
desired reference frequency is.

This brings us to the reference frequency. You've selected 833.333 Hz since the
normal channel spacing is 10KHz and your radio multiplies the VFO by 12. However,
your radio is limited to generating frequencies at integral multiples of the
reference frequency. This means that using a 10KHz channel spacing will prevent
you from operating on frequencies like 147.435, which is an integral multiple of
5KHz. If you figure it out, this would indicate your 12Mhz synthesizer would
use a reference frequency of 416.666 Hz.

Using such a low reference frequency is going to create a real problem in
your design with loop lock-up time and (more importantly) reference sideband
suppression. Your loop filter design will need to provide a very high amount
of rejection of the 400 Hz reference present in the phase comp output; practically
speaking, you won't be able to realize a good enough loop filter for this. The
problem with insufficient reference sideband suppression is that your radio,
after mulitplying the VCO by 12, will have birdies every 5KHz on 2m.

A good way to avoid this and still realize your goal is to build a 2m synthesizer.
Yup; run a VCO at the desired operating frequency. Then, use a prescaler to
divide it by 12. This way, using the Motorola MC145170, you can build a single
loop synthesizer which directly generates the required VHF signal using a 5KHz

reference and no heterodyne oscillators.

The output of the divide-by-12 circuit would be the VFO input. The radio, I assume, would phase modulate this without any problem.

As far as frequency stability concerns, you can probably achieve amateur standard stability using a conventional crystal as part of the MC145170 circuit. If you want better, then you can use a TCXO circuit or crystal oven.

I assume you plan to use one VCO to generate both the transmit signal and the receive first local oscillator signal. If so, make sure to add circuitry to the VCO to switch frequency ranges. Also, don't neglect to build and use a lock detect inhibit circuit since you would be experimenting with this and could lose lock by accident.

I would recommend that you verify spectral performance of the synthesizer using a spectrum analyzer before operating on the air, as I recommend whenever building a frequency synthesizer.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Myers@Cypress.West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

742. Re: RESPONSE to FT411e vox and Nasa-mics. etc..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 18:52:56 UTC
From: Unknown
Message-ID: <1993Sep23.135257.179@titan.ksc.nasa.gov>
Source record: 119356

In article <27r0gi$cp0@vixen.cso.uiuc.edu>, ahall@ux4.cso.uiuc.edu (Allen John Hall) says:
>
>
>
>Hello everyone,
>
> I finally got around to this, however I should probably be
>studying right now (but this'll be kept between you and I right?).
>Well, I basically asked three questions in the space of 1 week and
>I was able to come up w/ these answers thanks to many of you out
>there!
>
>******1) How do I make my ft411E vox work w/o buying the YH-2 headset?
>(I asked this because I ride and a headset doesn't fit too well under
>a helmet)
> (a)...unfortunately I don't know who gave this info to me, but here
> it is: You can use a radio shack electret mike-element (I used a
> 1kohm resistor in line w/ the center conductor of my jack (that'sa
> because they use some type of pre-amp in the one that I bought- it
> regulates the input voltage to the mic-element- don't ask me, I just
> did it and it works :) There are two different mic-elements for sale,
> I used the experiment (pc-board style) element (the one w/ only 2
> leads). and I was able to make something w/ this, but for that
> I'd like you to read on...
> (b)...I was reminded of the in the ear mics that work off of inner-
> ear noise (which would work well for my bike, but not for vox)
>
>******2)Info on the headsets that NASA uses in their control room??
> (a)...They are made by Plantronics- a good source for them is from
> an aviation mail-order shop in OH (suprise! they have another good
> use!):
> Sporty's Pilot Shop
> Clermont Co. Airport
> Batavia, OH 45103-9747
> or call 1-800-543-8633 and ask for their catalog (you might have
> to specify communications- apparently they have a couple of
> catalogs)
> I called them and recieved their catalog, a lot of interesting stuff,
> but didn't feature the headset I was looking for. I had also heard
> from a number of people that they are in the $200 range :(
> (b)...a source for telephone accessories:
> "Hello Direct" (no given 800#, but you could ask the 800-info
> number about them)
> (c)...Heil makes a nice headset but wouldn't work under a helmet

> (d)...use the inner-ear mic-ear peice
> (e)...there are bone-conducting mics (pricey and not yet easy to find)
> (f)...ask Steve Roberts N4RVE (but I think he's gone sailing)
> (g)...go to Japan- they sell all sorts of headsets :)
> (h)...the nice Plantronics one is the Telex Airman 750 headset
> approx. $200
>
>******3)Does anyone know of the group for bycicling hams??
> (a)...(please excuse the typo above!)
> Bicycling Mobile Hams of America
> send SASE to:
> BMHA
> Box 4009,
> Boulder CO
> 80306
> for a sample of their newsletter and membership info. They
> hold a net on 14.253mHz 2230UTC on the 1st and 3rd Sunday of the
>
> month. Contact: Hartley Alley, NA0A on packet:NA0A@WA8ZIA.CO
>
>Well, that should do it for those three questions...
>As for what I did w/ my VOX on the FT411e (I haven't tried this under
>riding conditions yet- might be too windy)
>********I used the radio-shack element (thanks to the unknown ham) wired
>the way I said above and their earpiece to make a boom mike. For the
>boom, I used 12 gauge wire w/ very small wire going from the mike-element
>down the boom to the earpiece, all secured w/ heat shrink. Then bent the
>12 gauge around the back of the ear and then did some fidling w/ some stiff
>wire my mother used for making wreaths @ x-mas, to hold on the ear-piece.
>then kinda made things look nice and lead a 3 element wire from the boom
>stuff to the connectors for the rig. I used some left over computer multi-
>conductor wire (from DB-9 connectors) which was quite small and flexible.
>I rigged up the connectors for the rig w/ some wire and plastic-welder
>glue so that it would make a 2-jack type plug (similar to the Yaesu plugs)
>so that I would only have to fit one 2-jack plug into the rig. As far
>as the rest goes, I wired both the grounds for the mic and earpiece togehter
>on one conductor and the other go to the center-conductors on the jacks.
>As far as how good this thing looks and works is kinda up to you, if
>you spend some time @ it, you can make it pretty sturdy. However,
>someone pointed out that the Plantronics-style headset doesn't stay on
>too well. Oh, by the way you should find that you can use this
>home-made earpeice-boom-mic both on the ft411e vox and also w/ just the
>PTT button on the rig- (two headsets in one!- and my total was only
>$6.00 dollars -> $1.20 for the mic-element, $1.36 for the earpiece, some
>scrap wire hanging around the club and the rest for glue and stuff), so
>sounds a bit better than $200, but it might not look as nice, but I've
>been told that the response on the mic-element is louder, and maybe even
>better than my rig's mic- go figure!
>
>Well, good luck w/ it and this was all done thanks to these people:

> Ted Cline
> Frank
> Paul Marsh
> Ted Zateslo
> Cantrell
> Mark
> Greg
> Michael Dodson
> Alan
> Dave
> and a few that I accidentally erased while I figured out
> how to print out all this excellent info!
>
>Thanks again to everyone who replied!!! I can e-mail this thing
>to you if you want, but as far as intricate explanations goes,
>I'm kinda crunched for time- but wouldn't hurt to ask if you like.
>And as always, I enjoy hearing your input...
>
>73's et CUL!!!
>Allen n9rzc
>
>email to: n9rzc@uiuc.edu
>
>
>
>
>
Allen,
There is an article in the QST Jan 93 issue which describes a VOX headset
for a KEnwood TS440 which costs about $5. My question to you is how did
you use the headset in a VOX mode? According to your message above you
wired the mic element basically directly to mic input along with ground to both
the audio and mic ground, does the FT411E have VOX mode built-in? I am
interested in doing the same for my mobile/HT (it's currently in use with a
momentary push button switch).

Please post your reply.
TNX
Tom

743. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 19:38:50 UTC
From: kg7bk@indirect.com
Message-ID: <kg7bk.748813130@indirect.com>
Source record: 119357

Cliff, sounds like a good application for the Techno-Whizzy (DDS).
kg7bk@indirect.com

744. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 20:25:40 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27t0o4$duu@newscast.West.Sun.COM>
Source record: 119358

In article 748813130@indirect.com, kg7bk@indirect.com (Cecil Moore) writes:
>Cliff, sounds like a good application for the Techno-Whizzy (DDS).

Since have some Q2220 DDS chips and CA3338E DACs and have built some
T-W style synthesizers, I thought about it myself.

I would suggest that the channelized characteristic of NBFM makes moot
the ability to generate frequencies in between normal "channels", where
a channel in this context means some frequency on a 5KHz spacing (for 2m).

In terms of power consumption and overall size, a PLL synth using a single
chip like the MC145170, which can directly control a VCO up to 170MHz, presents
a number of advantages. Lower power consumption, less problem with digital
noise getting into the output, much lower cost, much lower power consumption,
etc.

The DDS does offer some advantages; the rapid frequency change is probably
the largest practical advantage.

I ended up deciding a PLL made better overall sense in the application of
generating a base frequency for a multiplying type receiver.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

745. Re: Anyone interested in discussing PLL synthesis?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 20:41:48 UTC
From: lkraft@core.rose.hp.com
Message-ID: <CDtqtp.HEo@icon.rose.hp.com>
Source record: 119360

Cliff Sharp (clifto@indep1.UUCP) wrote:
: >
: > I've thought for a long time about synthesizing my old Sears-su rock-bound
: >unit, which has a VFO input. Sat down and did a little math, and the design
: >seems pretty straightforward; oscillators are in the 10-13 MHz range, etc.
: >The only problem I foresee is that tuning would require the VCO to change
: >frequencies at 833.3 Hz intervals, meaning to me that somewhere in the
: >chain, no matter how I design it, I'd end up using an 833.3 Hz frequency
: >standard.
: > That's not hard to produce, even with extreme accuracy; we have a local
: >AM station at 1000 KHz that I could phase-lock to for a frequency standard
: >and then divide down. My question is, how effectively is this system going
: >to lock and hold a locked condition with such a low frequency as the
: >standard? Seems to me lock would be slow (not good when going from xmit
: >to rcv) and not necessarily very stable.
: >--

Look at the schematics for the old Heathkit HW2036A two-meter
transceiver. It used a reference frequency of 833.33 Hz (generated
from a 10 MHz crystal), and it has 5 kHz steps at 144 MHz. VCO
operated around 22 MHz, and they mix it with a crystal oscillator
around 21 MHz to produce a difference signal that is applied to
the programmable divider.

One of the disadvantages of using a low reference frequency was that
it was much harder to filter out noise caused by the reference chain.
These transceivers had a trademark low-level "whine" caused by
833.33 Hz ground noise. And you are correct, it does take more time
for the system to achieve lock between receive and transmitter
compared to radios that use, say, 10 KHz. Seems stable enough though.

L

==
Lyle Kraft AA6LK
########################## Hewlett-Packard
/_ _ ###### System Interconnect Lab -
/ / /_/ ##### Information Networks Division
/ ###### Roseville, CA 95747
########################## 916-785-5798
lkraft@core.rose.hp.com
==

746. Re: Crystals...FT 243's...no longer made?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 20:57:00 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep23.205700.27419@cyphyn.radnet.com>
Source record: 119362

kstuart@oasys.dt.navy.mil (Kenneth Stuart) writes:
:
: Just as a point of information, JAN Crystals in Fort Myers, Fla. had
: FT-243 crystals as a line item in their 1992 catalog. Price was
: $8.00 plus $0.50 shipping ($10.00 minimum order).
:
: For current info, their number is 1-800-JAN-XTAL.
:
: Ken Stuart, W3VVN

Thanks.....the thing is, 1st, W0lps's xtals were under $5.oo inc shipping
and I have an order pending....quite a few xtals.

Well...if worse goes to worse, I'll change over to using HC-33/u (the
large tin chicklet, o.75" jobs) and use less drive...(6CL6 osc)

I was making a 1 tube, #26 triode xmit...has to have hi-drive xtals.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

747. Re: Cell phone parts for AmRadio?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 22:25:35 UTC
From: bwalzer@muug.mb.ca
Message-ID: <1993Sep23.222535.14535@muug.mb.ca>
Source record: 119363

In <nagleCDqo4H.1AC@netcom.com> nagle@netcom.com (John Nagle) writes:

>bwalzer@muug.mb.ca (Bruce Walzer) writes:
>>As I was thumbing through my Toko catalog the other day I came across a
>>section called SAW Filters. Apparently Toko makes SAW filters with center
[...]

> Those are still somewhat exotic components, not something the
>typical cell phone of today has. Current technology seems to be
>ceramic filters and IF cans, like an ordinary FM radio, which, after
>all, is all a cell phone is. Don't know about Qualicomm's new
>spread spectrum units, though, which should have some nice parts for
>the spread-spectrum crowd.

[Thoughtful discussion of good parts for amateur radio from cell phones
deleted. Thanks John.]

How do typical cell phones reject the reciever image? They have to receive
a band 20+ MHz wide. That would make the common 10.7 MHz IF freq not useful
so really cheap ceramic filters are out. A sort of cheap 21.4 MHz xtal
filter might work marginally. I've noticed from reading reviews of amateur
equipment that manufacturers seem to be using some really obscure IF
freqencies. Is everyone just getting their first IF filter cut to spec? What
is the "standard" IF freq for 440 and above?

Thanks again,

Bruce Walzer |Voice: (204) 783-4983
Winnipeg MB |Internet: bwalzer@mona.muug.mb.ca
Canada |AmRadio: VE4XOR

748. Re: transverter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-23 22:50:54 UTC
From: andyw@aspen32.cray.com
Message-ID: <1993Sep23.175054.12166@hemlock.cray.com>
Source record: 119364

In article <phil.748803395@bigcheese>, phil@math.scarolina.edu (Phil Moore) writes:
> I just finished building the Down East Microwave 70cm -> 10 mtr
> LO and RX brds (haven't finished the TX brd yet). Any recommendations
> about a good preamp to use with it? I'm going to use it
> for the PACSAT downlink.
>
>
> -phil AD4FH

From what I've heard, the best advice is don't; or if you really
have to, omit the first MMIC on the rx converter. I think you'll
trash your dynamic range if you don't. My sources are a phone
conversation with Bill at DEM, and a review in one of the magazines..

But, hey, I've been wrong before..
--
andyw N0REN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

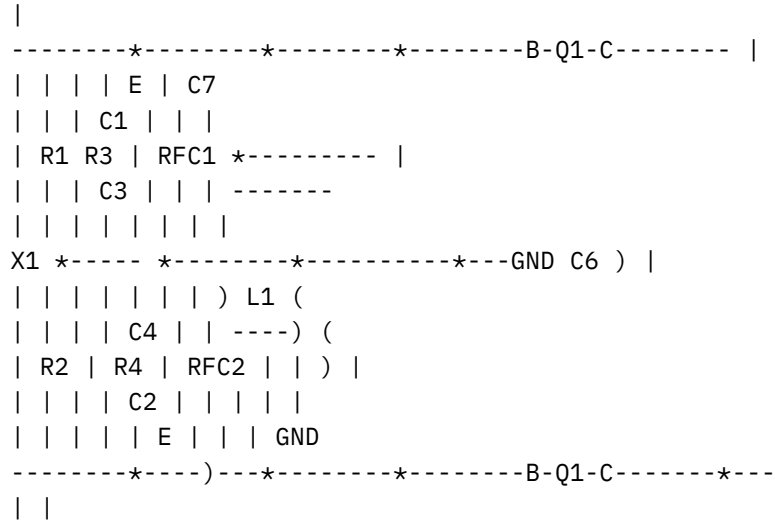
749. Project 8: 1 1/2 watts on 80M CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 01:43:20 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CDu4s8.DBz@news.Hawaii.Edu>
Source record: 119365

Can you all stand one more 80M xmtr? (Do you get the feeling that I'm trying to push for more 80M activity? I really love that band!) The book is 104 HAM RADIO PROJECTS FOR NOVICE AND TECHNECIAN by Burt Simon. Burt says: "This rig has provided many hours of fun for the authors in the 80M novice band, where regular 800 mile DX has been nothing out of the ordinary. In fact one contact was made with a W6 in Los Angeles from our Long Island,NY QTH.
"Tuning is conventional. Transistors should be loaded to about 50ma in the bottom of the dip if you're pumping in the full 30 volts. With C6 about half meshed, L1 should resonate at the low end of the 80M band. (You can check this with your GDO)."

Parts List

Q1, Q2 2N269 transistor
C1, C2 150 pF capacitor
C3, C4 300 pF
C5 .01 mF
C6 200 pF variable
C7 50 pF
R1, R2 470K resistor
R3, R4 2K
R5 200 ohms
B1 30 VDC battery
L1 30 turns, center-tapped, on 1 inch form, with 4 turn link into center for output
RFC1,2 2.5 mH RF choke (National R-100)
X1 80 meter fundamental crystal
M1 0-100 DC milliammeter



```
| |
--+B1---M1---*-------------------------------R5-----*-----C5-----GND
|
|
|
----KEY----GND
```

Note the polarity of B1; there are two `jumps': between R2 and R4, and
over the `hot' end of L1.

1 1/2 watts should be real fun - not quite the challenge as the 25 mw xmtr.

Okay, no more 80M xmtrs! I promised I'd post a 2M xmtr - I have two - neither
are FM, though. I'll post them next and let you folks figure out how to
FM them; shouldn't be hard at all. (Probably only the r.r.a.homebrew folks
will be interested in them, but you QRP mailgroup folks might have a use
for them also.)

Jeff NH6IL (ex: WA6QIJ)

750. Re: Cell phone parts for AmRadio?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 05:21:12 UTC
From: nagle@netcom.com
Message-ID: <nagleCDuEvE.IGz@netcom.com>
Source record: 119366

bwalzer@muug.mb.ca (Bruce Walzer) writes:
>How do typical cell phones reject the reciever image? They have to receive
>a band 20+ MHz wide. That would make the common 10.7 MHz IF freq not useful
>so really cheap ceramic filters are out.

They have to tune across a band 20MHz or so wide, but the IF bandwidth
is only 30KHz.

The Signetics app note suggests a 45MHz first IF and a 455KHz
second IF, front-ended by a duplexer, a preamp, a broadband filter,
and a first mixer. The frequency synthesizer feeds the first mixer.
So nothing beyond the first mixer needs a bandpass exceeding 30KHz.

There's a suggestion that a 80-90MHz first IF with SAW filters could be
better, but Signetics claims that a NE605 with ceramic filters is good
enough to meet the specs for cell phones. I don't know much about SAW
filters, though.

If you're really interested in using these parts, get the Signetics
RF data book. It's full of good application notes, which you need; building
tiny-scale RF gear with huge gains requires very careful layout, and they've
already done the necessary experimental work.

John Nagle

751. Re: What kits would you like to see?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 16:16:50 UTC
From: johnb@frye.frye.rain.com
Message-ID: <CDv983.2oz@frye.frye.rain.com>
Source record: 119419
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <1993Sep22.224844.26303@btree.uucp> hale@btree.uucp (Bob Hale) writes:
>In article <27lksv$99@usenet.INS.CWRU.Edu> aa570@cleveland.Freenet.Edu (Jim Cole) writes:
>>Sorry, to shoot you down Randy, but there is no clear and definite way
>>to detect commericals. Each network and cable company has varying
>>technical people and delivery of the signal is almost allways different.
>
>
>Sure there is. Pattern recognition.

I worked for a company called VIDICRAFT when I was 18 that made several
products such as commercial cutters that would pause a vcr when a commercial
was detected.The company is still around and still sells some of these exact
products I'm am refering to.The problem was never detection of the commercial
that was the easy part compared to interfacing with all the various vcr
manufactures. Each vcr man. had it's own standard on how much to rewind
the tape when pause was pushed after a commercial was detected.
I believe the company worked out the bugs in the products because I saw
some of their products in a local store a few years back.

--
John C. Burwell - Frye Electronics \ A boy asked his mom what a republican
Views expressed are not those of \ is, she said "it's someone who
Frye Electronics, Tigard, Oregon \ doesn't like to share!"

752. Where do you get a 2N269? (was: Project 8: 1 1/2 watts on 80M CW)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 17:20:52 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <27va9k$1ev@newscast.West.Sun.COM>
Source record: 119418

In article DBz@news.Hawaii.Edu, jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman) writes:

>Parts List
>
>Q1, Q2 2N269 transistor

Where did you find these transistors? The number is extremely old, and
I don't know where to find them.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

753. Surplus stores in the Boston area

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 18:54:15 UTC
From: bwhite@cobra.camb.inmet.com
Message-ID: <CDvGIF.HDu@inmet.camb.inmet.com>
Source record: 119420
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Does anybody know of electronics surplus stores in the Boston area? I know of one in Manchester NH, but I was hoping to find one closer to home. I know of Eli's in Cambridge, but they seem to have mostly old, dead test equipment. I am looking more for components.

754. Re: Project 8: 1 1/2 watts on 80M CW

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-24 19:09:12 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Sep24.190912.5352@cyphyn.radnet.com>
Source record: 119421

jherman@uhunix3.uhcc.Hawaii.Edu (Jeff Herman) writes:
: Can you all stand one more 80M xmtr? (Do you get the feeling that I'm trying
: to push for more 80M activity? I really love that band!)

You and me both

: 1 1/2 watts should be real fun - not quite the challenge as the 25 mw xmtr.
:
(Probably only the r.r.a.homebrew folks
: will be interested in them, but you QRP mailgroup folks might have a use
: for them also.)
:
: Jeff NH6IL (ex: WA6QIJ)

I gave myself and those I QSO'd a shock by contacting them on a lashed up
VFO'd 35mw xmit on 40mtrs...so I know what it's like.

Also tried a whole bunch of 1 and 2 transistor, to 4 transistor Xmits,
using 3700kc and 3686.4 KC crystals from Digikey (price was right) and plans
to use the clock-chips for 3686.4 and 28,332kc are 'in the works'

Having recently not been able to get any more crystals from W0LPS (FT 243s)
I'm not able to complete a #26 triode tube tx...good for 200mw or so....

I'll have to use a 6CL6 osc (very light drive to the crystal..330k grid res)
which then drives whatever tube for the out put...or by itself for 150 mw, and
use those low-drive Digikey crystals, or Jan crystals (also low drive).

What? Tubes? Tube people hate transistors, so 'they' say, so how come
I speak of transistors? (I do so in private!)

I'm not against transistors ....here's a list of ones I like:

(voltage is max safe B+...current is max safe tune up value I'd use)
(Lower B+, down to 5v is of course usable)

Ok up to 10mtrs

2N3904 or 2N2222(T0-92)--oscillator and GP amp(rf af) 12v 7ma median.
2N2222a (TO-18 or TO-5 or TO-39 bodies preferred) 12v 50ma
2N3053 (TO-5) 9v 50ma
2sc2314 (TO-220 like) 12v 100ma
2cs2166 (" ") 12v 330ma
2sc1969 (" ") 6v 700ma 12v 330ma

Ok for up to 145mc

2N3904 ---8 or 16mc osc or multiplier & amp 12v 7ma median.
2N3866 (TO-5 or 39 can) 24v 50ma 12v 50ma
2N4427 (" " ") 12v 100ma

The last 2 above & 2sc--- ones are at RF parts, San Marcos , Calif. and
will need heat sink fin, if run as high as shown.

'median' ... 3 to 15 ma

How does one subscribe to the mailing list for the QRP group?

Randy, KA1UNW randy@192.153.4.200

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

755. Re: Wide-band PLL's (was: discussing PLL synthesis)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-25 17:56:53 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2820p5$10q@hpscit.sc.hp.com>
Source record: 119422

>> I would like to join, just now I am planning a 100 to 200MHz VCO
>>with binary band switching, and have done small computer program

>Be careful. First off, I don't think you are able to do that in one
>oscillator, but if you do, you will still have other problems.

Actually, that is quite doable. I had a 100 to 300 MHz. VCO in production
when I worked for Lucas Zeta Labs 15 years ago. We also had 10 to
20 MHz, 50 to 150 MHz. and 500 to 1200 MHz. VCOs in production.
Never had much trouble with them. And their phase noise was the same
as narrow band VCOs. (We weren't however working in the lunatic fringe
of phase noise such as the HP8662, where you wouldn't want to do this).

>Also, if you use varicaps, much of the capacity in your oscillator
>will be from these varicaps, which have a low Q and thus will degrade
>the performance of your oscillator.

>Geert Jan

"Silicon capacitors" (i.e. varicaps) can actually have very respectable
Qs, frequently better than fixed capcitors and almost always better than
the inductor they resonate with.

>Have anyone experienced with strip-line inductors on PCB-board, what the
>Q could be on glass-epoxy boards ?.
>And size of 80 nH inductor ?.
>
>Kari

Using a shorted piece of semi-rigid coax to make an inductor is a bad
idea; you'll be lucky to get a Q of 30, which any molded inductor will
beat. Using a strip-line (I think you really mean "micro-strip") inductor
on a PC board is a *very* bad idea because the additional losses of
the epoxy will lower the Q to about 10. (Epoxy is *very* lossy above
50 MHz.). On the other hand, you can go to Toko or Coilcraft and get
a nice air core coil with a Q way over 100.

Instead of a micro-strip inductor, use a "printed inductor", consisting
of arcs on *both* sides of the board (same pattern) but with *no* ground
plane. Connect them together in several places with plated thru holes
(or "z" wires). This is good if you need a very low value of
inductance for your VCO. It can be shown that phase noise is
proportional to inductance in typical VCOs. I picked up 10 dB.
improvement in phase noise once by replacing a Toko airwound coil
with a much lower inductance printed inductor.

Rick N6RK
rkarlqu@scd.hp.com

756. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-25 18:03:42 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28215u$2c1@hpscit.sc.hp.com>
Source record: 119423

>
>A good way to avoid this and still realize your goal is to
>build a 2m synthesizer. >Yup; run a VCO at the desired operating
>frequency. Then, use a prescaler to >divide it by 12. This way,
>using the Motorola MC145170, you can build a single
>loop synthesizer which directly generates the
i>required VHF signal using a 5KHz
>reference and no heterodyne oscillators.
>
>The output of the divide-by-12 circuit would be
>the VFO input. The radio, I assume,
>would phase modulate this without any problem.
>
> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *

Well, this is certainly better than having an 833 Hz. reference frequency, but it will still give mediocre performance. Poor phase noise, poor microphonics, high power supply sensitivity. You really need to do the synthesis at a low frequency (around 10 MHz.) and then upconvert to VHF with a mixer using a crystal oscillator for an LO. Then divide by 12 or whatever.

Rick N6RK
rkarlqu@scd.hp.com

757. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-25 18:11:13 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2821k1$2ha@hpscit.sc.hp.com>
Source record: 119424

>2. Has anyone else done any work with phase-locking SAW oscillators?
>What kind of tuning range have you been able to achieve?
>
> / \/ / / Raymond E. Anderson WB6TPU

I designed the phase locked 640 MHz. SAW oscillator in the HP 5071A
Primary Frequency Standard. We routinely get 500 PPM of tuning range
(i.e. 320 kHz.) in production. I've seen some approach 1000 PPM.
I have been able to modify them on the bench to get as much as 1500 PPM.
Of course, we don't really need this much tuning range since our

12
frequency is always within 1 part in 10 :-)

Rick N6RK
rkarlqu@scd.hp.com

758. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-25 18:16:35 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2821u3$2nu@hpscit.sc.hp.com>
Source record: 119425

In article <27l7tg$9fu@cc.tut.fi>,
Kein{nen Paul <k23690@lehtori.cc.tut.fi> wrote:
>
>As a related topic, which is the correct way to design a Cauer loop
>filter ? Some sources say that the notch should be at the reference
>frequency. This looks strange to me, as a quadrature phase detector
>produces during lock a DC-component (loop control voltage) and
>_twice_ the reference frequency.
>
>Are there other filter designs that filter out the reference components
>without affecting too much the loop bandwidth in order to reduce the
>phase noise and eliminate the microphonics in a VCO ?
>
> Paul OH3LWR

I did a fair amount of study of filters for eliminate PLL reference
sidebands, and concluded that indeed the Cauer (elliptic function)
filter is the optimum filter.
It has worked miracles in all loops I tried it in. What you should do is
use a 5th or 7th order filter so you can put notches at *both* the
reference frequency and twice the reference frequency. This is doable
because you don't really care what the ripple spec on the filter is.

Rick N6RK
rkarlqu@scd.hp.com

759. Ramsey FX-440

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-25 18:19:29 UTC
From: kg7bk@indirect.com
Message-ID: <kg7bk.748981169@indirect.com>
Source record: 119426

Please give me a couple of weeks to organize my data on the FX-440.
I want to make some additional measurements... thanks, Cecil

kg7bk@indirect.com

760. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-26 17:00:28 UTC
From: clifto@indep1.UUCP
Message-ID: <2498@indep1.UUCP>
Source record: 119428

In article <27smfj$q17@newscast.West.Sun.COM> myers@cypress.West.Sun.COM writes:
>In article 2489@indep1.UUCP, clifto@indep1.UUCP (Cliff Sharp) writes:
>> I've thought for a long time about synthesizing my old Sears-su rock-bound
>>unit, which has a VFO input. Sat down and did a little math, and the design
>>seems pretty straightforward; oscillators are in the 10-13 MHz range, etc.
>>The only problem I foresee is that tuning would require the VCO to change
>>frequencies at 833.3 Hz intervals, meaning to me that somewhere in the
>>chain, no matter how I design it, I'd end up using an 833.3 Hz frequency
>>standard.
>
>Yeah, but not necessarily.

Let me clarify the reasons for choosing this particular frequency. I've
received a lot of replies saying the same thing.

The manual for the Sears-su, by the way, contains a page marked "FT-223
parts list". They supposedly once made a synthesizer _add-on_ for this rig,
but I haven't seen one at a hamfest since I bought the rig in the late 70's.
Nor have I come across a schematic.

The transmit VFO frequency is (output/12), making the range I want
12.0000 to 12.333333 MHz in 416.666 Hz steps (5 KHz / 12). (Back when I
started this, I was willing to accept 10 KHz steps, and forgot that when
I posted my original article; nowadays, it wouldn't be practical, especially
if I plan to use the unit on the local TCP/IP frequency of 147.555.)
The receive VFO frequency is (signal - 10.7 MHz)/9, giving a range of
14.811111 to 15.255555 MHz in 555.555 Hz steps. (How did I ever manage
my original idea??? This isn't making sense even as I type it.)
So the actual idea was that my frequency standard would be 1 MHz divided
by 1800 for receive, and by 1200 for transmit. (THAT'S how I imagined it.)
Of course, we run the VCO at the desired VFO frequency in either
event, use a programmable divider between the VCO output and the phase
detector, and phase-lock the divider output to the reference. Then a bit
of filtering of the VCO output produces a nice sine wave to drive the rig.

>> That's not hard to produce, even with extreme accuracy; we have a local
>>AM station at 1000 KHz that I could phase-lock to for a frequency standard
>>and then divide down.
>
>You don't need to phase lock to some external standard; none of my PLL radios
>do. The normal approach is to use a crystal oscillator to provide a standard
>frequency.

A 1 MHz crystal would be fine for the purpose, with a little tuning. In
my original post, I merely meant to point out that the exactness of the
"833.333 Hz" source was not a consideration, because even if I had to go to

extremes to avoid crystal trimming, drift, and the like, I always had the alternative of creating the master frequency standard by phase-locking to WCFL at 1 MHz and using their high-precision oscillator instead.
Put another way, what I was trying to do by stating that was to note that standard accuracy was not a problem in this case; what I thought would be a problem were things like slow lock, tendency to lose lock with supply voltage variations and/or noise, etc.

>Using such a low reference frequency is going to create a real problem in
>your design with loop lock-up time and (more importantly) reference sideband
>suppression. Your loop filter design will need to provide a very high amount
>of rejection of the 400 Hz reference present in the phase comp output; practically
>speaking, you won't be able to realize a good enough loop filter for this. The
>problem with insufficient reference sideband suppression is that your radio,
>after mulitplying the VCO by 12, will have birdies every 5KHz on 2m.

Second point first; "in my dreams", the unit itself would be well enough shielded that the only available output would be the VFO frequency. Since this would be the direct output of the PLL VCO, I would imagine the birdies wouldn't be there; in any event, since I'd have to waveshape the VCO output anyway, there'd be a multistage 12-16 MHz bandpass filter on the output which should easily take care of the 416 or 555 Hz problems. Only problem I see would be providing good enough shielding to avoid coupling to other parts of the radio.
First point; just what I was worried about. It would be fine to allow 1/2 to 3 seconds for receive lock; but that wouldn't be nice for transmit.

>A good way to avoid this and still realize your goal is to build a 2m synthesizer.
>Yup; run a VCO at the desired operating frequency. Then, use a prescaler to
>divide it by 12. This way, using the Motorola MC145170, you can build a single
>loop synthesizer which directly generates the required VHF signal using a 5KHz
>reference and no heterodyne oscillators.
>The output of the divide-by-12 circuit would be the VFO input. The radio, I assume,
>would phase modulate this without any problem.

Wouldn't even need to divide it down, really; I could just bypass the multiplier stages already in the rig and go direct to the target. But the nightmare of trying to generate a 146.94 MHz (square wave) signal, or 147.555, seems more formidable to me than approaching it from the low end.
Also doesn't ease the process when I get around to generating that LO frequency, either. (The subtract-and-divide-by-9.)

>I would recommend that you verify spectral performance of the synthesizer using
>a spectrum analyzer before operating on the air, as I recommend whenever building
>a frequency synthesizer.

Goes without saying! :-) I wouldn't even attach it to a dummy load before 'scoping the output and seeing a VERY pretty sine wave, much less checking for spurs while the dummy load was attached.

A final note: I took this on strictly as a challenge, "because it's there". It would undoubtedly be easier for me to find someone selling a broken rig

cheap and then fixing it myself (I'm counting pennies 'cause my bad back has kept me from working very much). But that would be old-hat for me, and synthesizing this FT-223 would be an accomplishment...
--
+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

761. Re: sideband filtering

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-26 18:04:57 UTC
From: root@jackatak.raider.net
Message-ID: <yeXHac6w165w@jackatak.raider.net>
Source record: 119453

c2xjcb@kocrsv01.delcoelect.com (James Bach) writes:
> In article <930921071236@spence>, swilhelm@[128.215.114.181] (Spence Wilhelm
> > I'm having trouble understanding how superhet recievers filter
> > out one sideband of a CW singnal.
> > IF filter or a function of the BTO?
^^^ can I assume typo and BFO?
> > Can anyone shed some light on this subject?

> What superhet filters-out one of the sidebands? What sidebands?
> ==== =========== ====
> (yeah, yeah, I know CW generates sidebands, dependant upon the
> waveshaping of the xmtr and the code speed, etc., but...

Maybe I was born too early, but I never worried about sideband until
it was in common use ;^) I built a BFO (Beat Frequency Oscillator for
the uninitiated or "morsely impaired ;^) circuit for a super-het
receiver as a kid so I could hear the CW rather than listen to hisses.
The detector was simply aware of signal or no signal, and the BFO
"beat" against the signal when it was there ("beeeeep") and was silent
when no signal was present...too simple to worry about, I guess...
Then too, I had visual cues as well... the old green winking eye on
that Zenith could track CW to about 10 words per minute... probably
explains why it took so long to get my general... ;^)

73, Jack/W4PPT

+--*--+
Jack GF Hill	Voice: (615) 459-2636 - Ham Call: W4PPT
P. O. Box 1685	Modem: (615) 377-5980 - Bicycling and SCUBA Diving
Brentwood, TN 37024	Fax: (615) 459-0038 - Life Member - ARRL
root@jackatak.raider.net - "Plus ca changer, plus c'est la meme chose"
+--*--+

762. Project 9: 2M CW transmitter

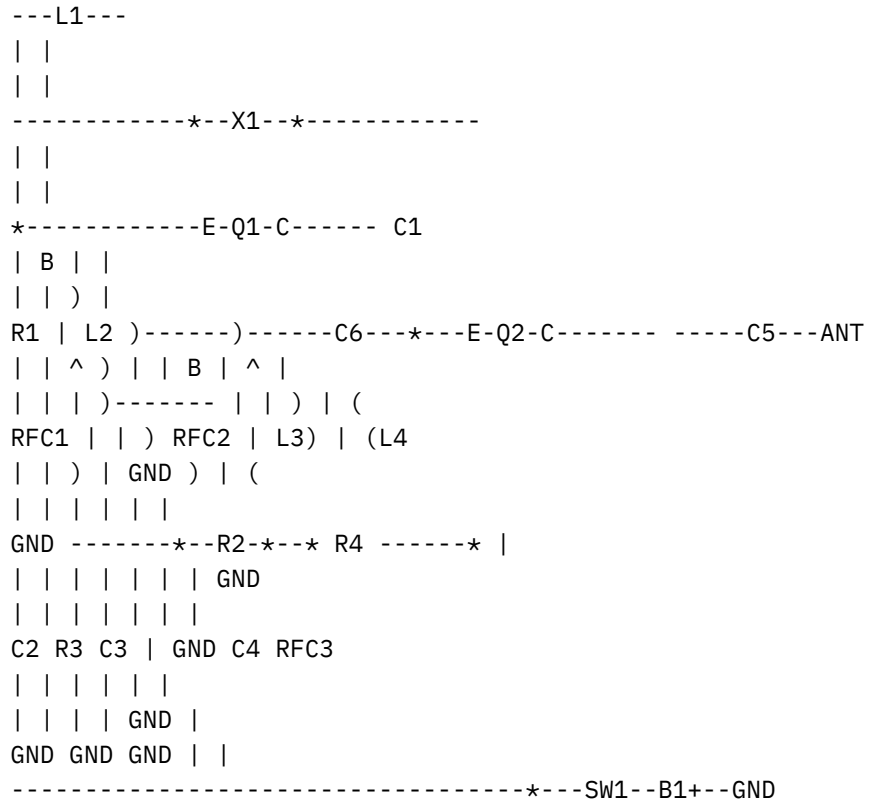
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-27 02:40:20 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CDzrF8.7uE@news.Hawaii.Edu>
Source record: 119427

Here's the first of two 2M xmtrs: this one is a 2-transistor CW rig and the other is a 3-transistor AM circuit which you can FMize yourself (of course the AM xmtr can be used for CW, too). Here's what Burt Simon in 104 HAM RADIO PROJECTS FOR NOVICE AND TECHNICIAN (1968) has to say:
"Here's a dandy 2-meter CW rig that will astound the local gang. Using only 2 transistors and a 72 MHz third overtone crystal, you can practically carry the set around with you. It can be built into the tiniest of boxes and requires only a 9-volt battery to power it. At least one VHFer has worked 110 miles with this transmitter, and several (built as club projects) have been equipped with simple one-transistor modulators.
"Construction is simple, although care must be taken to insure that all leads are as short as possible. L3 should have its iron-core slug removed. The RFCs are simple 1/2 watt resistors wound full of #36 enameled wire. To check their efficiency, use a grid dip meter to see if you're anywhere near 144 MHz. If they aren't, remove or add turns until the desired frequency (should correspond with your transmit frequency) is achieved. L1 should be neutralized by winding a full solenoid of #26 wire on a 1 meg, 1 watt resistor. Leaving only about 1/2-inch of lead, solder the choke to the crystal socket. It should resonant at your operating frequency.
"Main thing is to get the crystal to oscillate. If you have trouble, adjust L2 and expand or compress the turns of L1 until you hear (using a 2-meter receiver) the oscillator harmonic. From here on in you can simply tune for maximum signal using a GDO, field strength meter, or receiver S meter."

Parts List

Q1, 2 2N1745 transistor
C1, 2 .001 mF capacitor
C3, 4 .01 mF
C5 50 pF
C6 12 mF, 5%
R1 510 ohm resistor
R2 30K
R3 10K
R4 100 ohms
B1 9vdc battery
L1 19 turns #24 enameled wire on 1 meg, 1 watt resistor
L2 9 1/2 turns #24 enameled wire on 5/16 inch slug-tuned form
L3 6 1/2 turns #24 enameled wire, spaced 1/6 inch on 5/16 inch slug-tuned form
L4 1 3/4 turns #22 enameled wire on cold end of L3
RFC1,2,3 #36 enameled wire wound (and glued) on 1/2 watt resistor. Should check to approximately 145 MHz with GDO. If it doesn't, adjust number of turns. (Ohmite Z-144)
X1 72 MHz 5th overtone crystal

SW1 SPST switch



Notes: Observe good VHF wiring techniques (we can't be as sloppy here as we are down on the HF bands!) The positive pole of B1 goes to ground. I attempted to use arrows to indicate the adjustable coil forms. Nothing was said about the two taps coming off of L2 - you'll have to experiment as to their placement. C1 jumps over the other tap from L2.

If any of you build this pup let the rest of us know how you got it to work.... (who in the world has even got 72 MHz xtals anymore?)

Jeff NH6IL (ex WA6QIJ)

763. Re: Cell phone parts for AmRadio?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-27 06:59:48 UTC
From: morris@grian.cps.altadena.ca.us
Message-ID: <1993Sep27.065948.22644@grian.cps.altadena.ca.us>
Source record: 119429

nagle@netcom.com (John Nagle) writes:

>bwalzer@muug.mb.ca (Bruce Walzer) writes:
>>How do typical cell phones reject the reciever image? They have to receive
>>a band 20+ MHz wide. That would make the common 10.7 MHz IF freq not useful
>>so really cheap ceramic filters are out.

> They have to tune across a band 20MHz or so wide, but the IF bandwidth
>is only 30KHz.

> The Signetics app note suggests a 45MHz first IF and a 455KHz
>second IF, front-ended by a duplexer, a preamp, a broadband filter,
>and a first mixer. The frequency synthesizer feeds the first mixer.
>So nothing beyond the first mixer needs a bandpass exceeding 30KHz.

> There's a suggestion that a 80-90MHz first IF with SAW filters could be
>better, but Signetics claims that a NE605 with ceramic filters is good
>enough to meet the specs for cell phones. I don't know much about SAW
>filters, though.

> If you're really interested in using these parts, get the Signetics
>RF data book. It's full of good application notes, which you need; building
>tiny-scale RF gear with huge gains requires very careful layout, and they've
>already done the necessary experimental work.

> John Nagle

SAW filters are available for channel 3 and 4 TV - so an IF in this area
can use commonly available parts. I once saw a 900mhz Motorola traffic
light control system that used a 150.0 mhz mobile receiver with a 900mhz
converter ahead of it. The receiver was a stock Motrac but with a 100kc
wide IF fiter. The 900mhz converter was a 450 BBT series front end with
the tuned lines trimmed in half, and had an extra doubler on the local
oscillator.
--
Mike Morris WA6ILQ | This space intentionally left blank.
PO Box 1130 |
Arcadia, CA. 91077 | All opinions must be my own since nobody pays
818-447-7052 evenings | me enough to be their mouthpiece...

764. Help With HW-99 CW Transceiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-27 16:10:42 UTC
From: auchd@acad2.alaska.edu
Message-ID: <1993Sep27.121042.1@acad2.alaska.edu>
Source record: 119430

I just recently acquired a Heathkit HW-99 CW Transciever at a Local Hamfest. I thought I got a good deal for $80.00 dollars until I got the rig home and tried to work it through its paces. When I turn it on and tune up and down the band I get several harmonics from a local radio station, but not signals (In comparison to my Sony ICF-2001. For example, after dark I canno pick up any signals, using my dipole up at 20 feet, whereas I can pick up quite a few signals on my Sony. The other problem is that the rig won't put any power out. When the key is pressed, I hear the sidetone and the relay clicking, but not measured watts being put out. I also tried to do a frequency trace using a frequency counter. I took the rig apart and checked the PA on the system and it appears that power is getting to the amp, but no signal is getting out. I have a strong sense that there might be a blown FET, but don't know why the radio doesn't seem to be picking anything up. Has anyone in this newsgroup encountered such a problem with this rig and does anyone have any suggestions. A manual or similar information would be very helpful.

James Wiedle
Soon to be xx7xx

765. HELP WANTED: Diode tripler for 145 to 435Mhz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-27 20:01:34 UTC
From: DOUG@HDQCMS2H.UTSD.ATT.COM
Message-ID: <16C56E15E.DOUG@HDQCMS2H.UTSD.ATT.COM>
Source record: 119431

I'm looking for a design or construction article on a diode tripler
that will take a 145Mhz FM signal in and put out a 435Mhz FM signal.

Does anyone have any pointers on how to do this ???? One source told me
to see the book _FM_and_Repeaters_ 2nd edition. (1978) pp.49-50 but
this is OUT OF PRINT!! Does anyone have a copy? I only need those pages.
Please email me if you have this book.

Other ideas/designs/plans are most welcome. I would like to start with
my 145Mhz FM signal and end up with about 10 watts of 435Mhz FM, but
I'm a bit unclear on how to make this happen (except that it has
something to do with diode triplers.)

Please send any email replies to dquagliana@attmail.com
Douglas Quagliana KA2UPW
dquagliana@attmail.com

766. DTMF decoding using Soundblaster board?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 00:58:02 UTC
From: pazder@wynne.UVic.CA
Message-ID: <1993Sep28.005802.15315@sol.UVic.CA>
Source record: 119432

Hello,

Has anyone seen a program out there for DTMF decoding using a soundblaster board with an IBM type computer?

John Pazder (VE7JPP)

767. TS-930S computer control hack?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 12:29:21 UTC
From: sims@sauron.msfc.nasa.gov
Message-ID: <289an1$n5j@avdms8.msfc.nasa.gov>
Source record: 119433

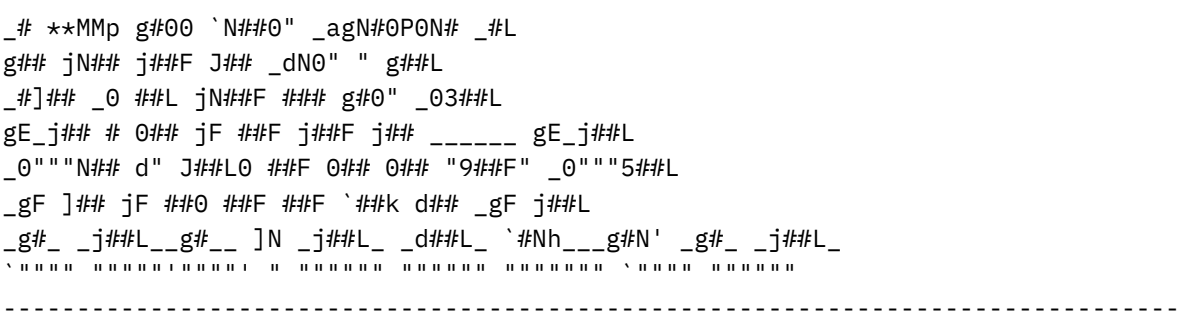
Well, the contest time is rolling around, and I was just wondering
if anyone out there knows of anyone who has designed and built
a hack for the kenwood ts-930s radio to allow computer interface?

Please e-mail direct.

Thanks,

Herb

W. Herb Sims sims@sauron.msfc.nasa.gov
KU0C sims@saruman.msfc.nasa.gov
MSFC/NASA/EB56 sims@avdms8.msfc.nasa.gov
Huntsville, AL 35812 PP-ASEL-IA



768. NEEDED Manual and tubes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 13:37:27 UTC
From: cowart@convex.com
Message-ID: <cowart.749223447@neptune>
Source record: 119434

I bought a Heathkit HA-14 at a swap meet this weekend. THe tubes are soft.

I need a cheap source for 572B's.

If you have any for sale, I'll pay the shipping.

I also need a copy of the manual.

The HA-14 is the mobile version of the SB-200.

73, Mike

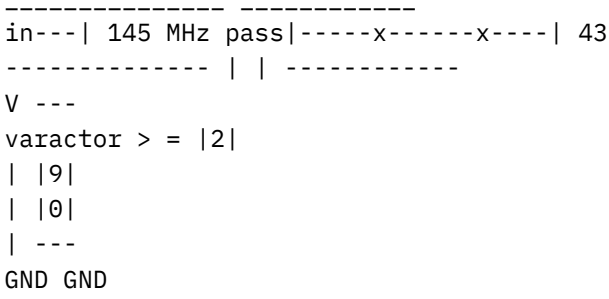
home phone: (214) 840-8667
work phone: (214) 497-3029
e-mail cowart@convex.com

769. Re: HELP WANTED: Diode tripler for 145 to 435Mhz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 13:49:14 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep28.134914.13483@ke4zv.atl.ga.us>
Source record: 119436

In article <16C56E15E.DOUG@HDQCMS2H.UTSD.ATT.COM> DOUG@HDQCMS2H.UTSD.ATT.COM (Douglas Quagliana) writes:
>I'm looking for a design or construction article on a diode tripler
>that will take a 145Mhz FM signal in and put out a 435Mhz FM signal.
>
>Does anyone have any pointers on how to do this ???? One source told me
>to see the book _FM_and_Repeaters_ 2nd edition. (1978) pp.49-50 but
>this is OUT OF PRINT!! Does anyone have a copy? I only need those pages.
>Please email me if you have this book.
>
>Other ideas/designs/plans are most welcome. I would like to start with
>my 145Mhz FM signal and end up with about 10 watts of 435Mhz FM, but
>I'm a bit unclear on how to make this happen (except that it has
>something to do with diode triplers.)

Ok, I'll take a stab at this. What you want is a *varactor* tripler.
This circuit has a 145 MHz tuned input, the varactor, an idler tank
tuned to 290 MHz, and an output circuit tuned to 435 MHz. It looks
something like this:



The idler tank improves efficiency by giving a 2nd harmonic signal
for the input to mix with.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

770. RE: Rick Campbell's R2/T2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 15:06:24 UTC
From: koehler@skyfox
Message-ID: <28SEP93.15062448@skyfox>
Source record: 119435

Jim, VE5FP

771. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 15:55:33 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <289mpl$buf@newscast.West.Sun.COM>
Source record: 119437

In article <28215u$2c1@hpscit.sc.hp.com> rkarlqu@scd.hp.com (Richard Karlquist) writes:
>>
>>A good way to avoid this and still realize your goal is to
>>build a 2m synthesizer. >Yup; run a VCO at the desired operating
>>frequency. Then, use a prescaler to >divide it by 12. This way,
>>using the Motorola MC145170, you can build a single
>>loop synthesizer which directly generates the
>i>required VHF signal using a 5KHz
>>reference and no heterodyne oscillators.
>>
>>The output of the divide-by-12 circuit would be
>>the VFO input. The radio, I assume,
>>would phase modulate this without any problem.
>>
>> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
>
>Well, this is certainly better than having an 833 Hz. reference frequency, but
>it will still give mediocre performance. Poor phase noise, poor microphonics,
>high power supply sensitivity. You really need to do the synthesis at a low
>frequency (around 10 MHz.) and then upconvert to VHF with a mixer using a
>crystal oscillator for an LO. Then divide by 12 or whatever.

Why does synthesizing at 146Mhz and then dividing produce a signal with poorer
characteristics than radios which directly synthesize at 146 Mhz?

I'm suggesting building a single loop 146Mhz synth with no prescaler,
using a 5KHz reference. The only trick is to divide the output down to
be compatible with the radio's multipliers.

I've seen several VHF synthesizers operating at 146Mhz that have no detectable
microphonics, low phase noise and no problem with power supply sensitivity.
For example, a Motorola MCX100 is quite good in all these respects.

What am I missing?

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

772. Voltage for delay relay?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 17:34:27 UTC
From: STRICK@UGA.CC.UGA.EDU
Message-ID: <16C57BEE4.STRICK@UGA.CC.UGA.EDU>
Source record: 119454

I recently picked up an Amperite Delay Relay with identification on
the box and glass body of "6N015". Box says: Heater: Prongs 2-3,
Relay: Prongs 5-7. I know I can start with a low voltage and work
my way up trial-n-error, but does anyone have the specs for the
heater voltage on this little gem? Thanks.
Strick

***** Bill Strickland ***** University of Georgia ***** Athens, GA *****

773. TR-2600A: PLL performance analysis

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 19:22:25 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <28a2th$duc@newscast.West.Sun.COM>
Source record: 119438
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.equipment

For giggles, I decided to evaluate the PLL in my Kenwood TR-2600A HT.

I used the Kenwood TR-2600A service manual and Motorola MC14155 data sheet to determine the various arcane numbers I use.

The low pass filter used is the damped RC filter presented as filter "B" in the MC145155 data sheet. The response of this filter is:

F(s) = (t2*s + 1)/(t1*s + 1)

t1 = (R1+R2)*C
t2 = R2*C

C = 2.2uF
R1 = 10K
R2 = 470

The phase detector gain (Kp) is equal to Vdd/4*Pi. The Service Manual shows 5.7V as the typical Vdd; hence Kp = 5.7/(4.0*Pi).

The VCO gain (Kv) is suggested by the tuning instructions on page 33 of the Kenwood manual. This shows a minimum control voltage of 1.4V when operating at 140.000Mhz and a maximum of 5.2V when operating at 149.995MHz. This gives Kv = (2*Pi*9.995Mhz)/(5.2V-1.4V).

Since the reference frequency is 5KHz, N=f/5Khz. For a mid-band 146MHz transmit frequency, N = 29200.

Using the Motorola supplied equations:

wn = sqrt((Kv*Kp)/(N*C*(R1+R2))) or 105.57 rad/sec (16.8Hz).
damping = 0.5*wn*(C*R2+N/(Kp*Kv)) or 0.260

The rather low damping factor suggests this PLL will be somewhat unstable after a frequency change. Sure enough, when I push PTT, the HT starts transmitting with a ker-chunking noise on the transmitted audio. Looking at the audio on a receiver with a scope shows the ringing PLL characteristic.

I wonder why Kenwood underdamped the PLL so seriously. More damping would result in slower response to frequency change, but the PLL takes so long to settle down I'm not sure it is worth it. I can't help but wonder if the filter was changed in production to reduce the amount of time it takes the radio to lock-up at the expense of allowing a significant ringing each time PTT is pushed. This ringing causes the radio to generate a "click" in a sharp receiver tuned to an adjacent channel.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

774. AM Stereo Add-in Possibilities

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 20:51:51 UTC
From: joe@netcom.com
Message-ID: <joeCE30MJ.IxD@netcom.com>
Source record: 119439
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.shortwave,rec.radio.scanner

Seems like someone should come out with an add-in AM stereo
board. Radio-Electronics did a kit story a few years ago using
the Motorola chip. In a side bar, a note indicated Circuit Specialists
of Tuson Arizona had a complete kit. Well, I called them and the
woman answering the phone said they no longer have anything like
this. Oh well...

The point was I tested the new super Denon unit next to the Lowe 150
with AM sysnc detector - no contest, the Lowe has a MUCH better RF
section, but NO stereo! I can add a board to demodulate AM stereo...

--

Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
21414 W. Honey Lane, Lake Villa, IL, 60046

--

Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
21414 W. Honey Lane, Lake Villa, IL, 60046
---

775. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 22:33:34 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28ae3u$48p@hpscit.sc.hp.com>
Source record: 119440

>Why does synthesizing at 146Mhz and then dividing produce a signal with poorer
>characteristics than radios which directly synthesize at 146 Mhz?

I didn't say it was poorer, only equally poor.

>
>I'm suggesting building a single loop 146Mhz synth with no prescaler,
>using a 5KHz reference. The only trick is to divide the output down to
>be compatible with the radio's multipliers.
>

A simple single loop synthesizer that divides down from 146 MHz. to
5 kHz. will have a value of N of around 30,000 and a loop bandwidth
of 100 Hz. at best. The phase noise floor in the loop will typically
be only -30 to -60 dBc./Hz. due to the ridiculous value of N.
Whenever I have built loops like that, I had a lot of trouble with them.
Try these tests: mount the speaker in the same chassis with the radio,
including the VCO for the synthesizer. Now turn the speaker up nice and
loud, so you can get good copy driving on the freeway with your windows
open. You tend to get feedback from the speaker modulating the VCO.
The radio typically will start howling. Another test: place the radio
on top of an AC power supply. You tend to get a lot of 60 Hz. modulation
from the power transformer leakage field modulating the core of the VCO coil.

>I've seen several VHF synthesizers operating at 146Mhz that have no detectable
>microphonics, low phase noise and no problem with power supply sensitivity.

How do you know they are simple synthesizers using a single mixerless loop
with a 5 kHz. reference frequency?

>For example, a Motorola MCX100 is quite good in all these respects.

I am not familiar with that specific model, but the Motorola synthesizers
I am familiar with are generally not single mixerless loops. Does the
MCX100 pass the tests I mentioned above? Also, how low are the 5 kHz.
sidebands? If it is as good as you say it is, then they probably have
developed some really good VCO technology. But that won't help you with
this architecture unless you use their hot shot VCO.

>--
> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *

Rick Karlquist N6RK
rkarlqu@scd.hp.com

776. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-28 23:07:26 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <28ag3e$h39@newscast.West.Sun.COM>
Source record: 119441

In article 48p@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:
>>Why does synthesizing at 146Mhz and then dividing produce a signal with poorer
>>characteristics than radios which directly synthesize at 146 Mhz?
>
>I didn't say it was poorer, only equally poor.

I rather suspected that :-). It probably would have been more illuminating
to say something like "the performance of an average amateur VHF PLL
synth is not nearly what it can be". :-)

>>I'm suggesting building a single loop 146Mhz synth with no prescaler,
>>using a 5KHz reference. The only trick is to divide the output down to
>>be compatible with the radio's multipliers.

[deleted]

>Whenever I have built loops like that, I had a lot of trouble with them.
>Try these tests: mount the speaker in the same chassis with the radio,
>including the VCO for the synthesizer. Now turn the speaker up nice and
>loud, so you can get good copy driving on the freeway with your windows
>open. You tend to get feedback from the speaker modulating the VCO.
>The radio typically will start howling. Another test: place the radio
>on top of an AC power supply. You tend to get a lot of 60 Hz. modulation
>from the power transformer leakage field modulating the core of the VCO coil.

Sounds like a Ramsey radio.... :-) Honestly, I used to use a Kenwood
TM-2550 that had real problems like this, too.

>>I've seen several VHF synthesizers operating at 146Mhz that have no detectable
>>microphonics, low phase noise and no problem with power supply sensitivity.
>
>How do you know they are simple synthesizers using a single mixerless loop
>with a 5 kHz. reference frequency?

I'm as capable as anyone else when it comes to reading to schematics. block
diagrams, and service manuals. You are teasing, aren't you?

>>For example, a Motorola MCX100 is quite good in all these respects.
>
>I am not familiar with that specific model, but the Motorola synthesizers
>I am familiar with are generally not single mixerless loops. Does the
>MCX100 pass the tests I mentioned above? Also, how low are the 5 kHz.
>sidebands? If it is as good as you say it is, then they probably have
>developed some really good VCO technology. But that won't help you with
>this architecture unless you use their hot shot VCO.

Yes, the (VHF) MCX100 easily passes all the tests you described. If you'd like, I'dbe happy to send a copy of the manual page which describes the synth design. It uses a single chip device driving a sample/hold phase comp. It is programmed with a TTL PROM.

The VCO is rather special, though. It is a hybrid microcircuit, uses a micro-stripline inductor, with PIN switches for range selection. The VCO is attached to the die-cast chassis and covered by a die-cast cover. The entire synth then is covered by a very snug shield, attached with a big screw. Mechanically very rigid. Radio is extremely rugged. Speaker is external, but I set the speaker on the radio without howling. Radio can be pounded on without detectable microphonics.

Granted, most ham gear is not nearly this good, and you have very good points.

Gawd, I love Motorola.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

777. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 00:05:13 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28ajfp$aqe@hpscit.sc.hp.com>
Source record: 119442

In article <28ag3e$h39@newscast.west.sun.com>,
Dana Myers <myers@cypress.West.Sun.COM> wrote:

>>How do you know they are simple synthesizers using a single mixerless loop
>>with a 5 kHz. reference frequency?
>
>I'm as capable as anyone else when it comes to reading to schematics. block
>diagrams, and service manuals. You are teasing, aren't you?

No offense intended. I just wanted to make sure you had actually done that
rather than guessing. Like I said, it was contrary to my experience; I
stand corrected.

>Yes, the (VHF) MCX100 easily passes all the tests you described. If you'd
>like, I'dbe happy to send a copy of the manual page which describes the
>synth design. It uses a single chip device driving a sample/hold phase comp.

The sampling phase detector allows them to get around the traditional problem
you have with reference frequency sidebands. Unfortunately, most ham designs
use digital phase detectors patterned after the 4044. BTW, the MC145159
synthesizer chip with sampling phase detector has a bug in it, so if you
use it, be aware of the bug. The Philips sampling synthesizer chips have
their own problems.

>The VCO is rather special, though. It is a hybrid microcircuit, uses a
>micro-stripline inductor, with PIN switches for range selection. The VCO
>is attached to the die-cast chassis and covered by a die-cast cover. The
>entire synth then is covered by a very snug shield, attached with a big screw.
>Mechanically very rigid. Radio is extremely rugged. Speaker is external,
>but I set the speaker on the radio without howling. Radio can be pounded on
>without detectable microphonics.
>
>Gawd, I love Motorola.

Yes, that is a valid approach (typical Motorola) to the problem. It just
doesn't lend itself to homebrew construction, unless you cheat and buy a
VCO from Motorola, which might not be a bad idea. The VCO's in cellular
phones are damn good too and only cost $20 (or less if you buy them surplus).

> * Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *

Rick Karlquist N6RK
rkarlqu@scd.hp.com

778. Cavity amplifier design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 09:58:08 UTC
From: dejongh@dutiws.twi.tudelft.nl
Message-ID: <CE410x.DDG@dutiws.twi.tudelft.nl>
Source record: 119443
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sci.electronics

This is my second attempt.... I didn't receive any response at all!
Come on.. is there actually nobody who can answer my questions?

Repost.....:

For a long time I'm looking for the mathematics behind amplifier cavity
design. Designing an amplifier with a 1/4 (3/4 or 5/4) wavelength Lecher is
not a problem. The mathematics and formulas are widely available.
Theory and practice coincide well.
Looking at several cavity designs of tube amplifiers in the 1 - 3 GHz range
it seems that one mode is common: TEM101 (I'm not sure if this is correct).
One can determine that for a circular cavity the diameter is related
to half the wavelength and depends on the capacitance of the tube being used.
The height, mostly fixed due to the physical properties of the tubes,
determines the cavity impedance, I'm told.
I asked numerous SHF-heroes about the formulas behind the cavities. Nobody
could give me a satisfying answer. In fact, most 'designers' admitted that
they used the trail and error approach.
Looking in several books (electronic engeneering, physics, etc) the theory
behind cavities is explained. But I've never seen a publication where
a tube (read: capacitance) is introduced and with what effect on the physical
properties of the cavity.
I want to design an amplifier for 1296 MHz (23 cm amateurband) with a tube
but I don't want to use the 3/4:5/4 wavelength approach.

Anyone in net.land who has info, examples or references on this subject?

Thanks in advance,

Remco, PA3FYM (besten@chem.ruu.nl)

779. Re: high speed datalink

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 11:54:57 UTC
From: jf7wex@yumyum.sdj.miyagi.prug.or.jp
Message-ID: <JF7WEX.93Sep29205457@yumyum.sdj.miyagi.prug.or.jp>
Source record: 119457
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <27qf9iINNsl4@matt.ksu.ksu.edu> electro@matt.ksu.ksu.edu (Eric L Patterson) writes:

Does anyone have plans, or know where to get plans for a
high speed 1.2 - 2.4G 1Mb/s (or faster) datalink? Preferably
ethernet interface, but I'll take any other interface.

I have a plan agrees just your frequency and speed with some
designs using inexpensive chips for consumer products, a plan
which has not been applied any of interface to TNCs or computers
and not completed yet.

Unfortunately, since I have not enough time now to carry out
the plan for high speed packet, completely or even to write
a whole diagram, It will take much more time...

Another plan which is probably applicable up to 500kbps using
FSK is in progress, but it has not come to whole diagram.
Partly drawn diagrams with the TNC-Z, digital filters,
a modulator and a demodulator, will be available at PARTECH,
PAcket Radio TECHnical conference, in the next month in Japan.
(JE1WAZ designed the TNC-Z which can handle up to 2Mbps.
Some digital filters were designed by JN1JDZ.)

I just finished writing a paper for the conference.

Ryuji Suzuki JF7WEX
Packet Radio User's Group

780. Re: Cavity amplifier design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 12:48:00 UTC
From: malouf@estd.nrl.navy.mil
Message-ID: <29SEP199307483074@estd.nrl.navy.mil>
Source record: 119444
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sci.electronics

>For a long time I'm looking for the mathematics behind amplifier cavity
>design. Designing an amplifier with a 1/4 (3/4 or 5/4) wavelength Lecher is
>not a problem. The mathematics and formulas are widely available.
>Theory and practice coincide well.
>Looking at several cavity designs of tube amplifiers in the 1 - 3 GHz range
>it seems that one mode is common: TEM101 (I'm not sure if this is correct).
>One can determine that for a circular cavity the diameter is related
>to half the wavelength and depends on the capacitance of the tube being used.
>The height, mostly fixed due to the physical properties of the tubes,
>determines the cavity impedance, I'm told.
>I asked numerous SHF-heroes about the formulas behind the cavities. Nobody
>could give me a satisfying answer. In fact, most 'designers' admitted that
>they used the trail and error approach.
>Looking in several books (electronic engeneering, physics, etc) the theory
>behind cavities is explained. But I've never seen a publication where
>a tube (read: capacitance) is introduced and with what effect on the physical
>properties of the cavity.
>I want to design an amplifier for 1296 MHz (23 cm amateurband) with a tube
>but I don't want to use the 3/4:5/4 wavelength approach.
>
>Anyone in net.land who has info, examples or references on this subject?
>
>Thanks in advance,
>
>Remco, PA3FYM (besten@chem.ruu.nl)
>

I'm not familiar with some of the terms (e.g. Lecher) you're using,
and your brief description wasn't enough to allow me to fully
understand your application. Therefore I cannot address your
problem directly.

I'm involved in the design of microwave amplifier tubes with
emphasis on fast wave devices (gyrotrons). One reason why you
might not find more than the simplest examples of cavities worked
out in books is that the more complicated cases are practically
intractable from an analytic approach. Anything but the simplest
examples are hard to set up, a pain to try to solve analytically,
require computer solution of integrals, and after all that the
parameter you're trying to solve for might be off from the actual
value by an order of magnitude. For microwave circuits involving
waveguides and cavities it's almost always easier to hone your
design in the lab with some mock-ups of the "plumbing". This
applies to passive microwave devices.

Active microwave devices, including electron beam tubes you refer to, are even harder to analyze. When we tackle such problems we must rely on a computer to solve the self-consistent set of differential equations which describe the interaction between the electron beam and the microwaves. Forget about approaching these things analytically. The Russians have been better than most with their analytic approaches (they didn't have good computers to lean on like we had), and I can tell you from experience that the great Russian papers are VERY hard to read and understand, for all the high level applied math.

You're better off trying to measure the desired parameter (capacitance?) in the laboratory, if you can. Sorry if this isn't much help. I didn't understand your underlying problem, just some of the peripheral complaints.

Perry Malouf

781. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 15:11:46 UTC
From: reilly@ricks.enet.dec.com
Message-ID: <CE4FJM.5L6@ryn.mro4.dec.com>
Source record: 119448

In article <28ajfp$aqe@hpscit.sc.hp.com>, rkarlqu@scd.hp.com (Richard Karlquist) writes:
|> ..... BTW, the MC145159
|> synthesizer chip with sampling phase detector has a bug in it, so if you
|> use it, be aware of the bug.....

Where can I find information on the "bug". Is this for the -1 or -2 variant?
Could you post a quick description to the net?

Also, has anyone else noticed that the app note is not terribly instructive
when it comes to using the frequency steering output?

Other than that the 159 is a pretty neat chip.

Matt Reilly
KB1VC

782. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 16:13:29 UTC
From: raymonda@uranium.EBay.Sun.COM
Message-ID: <28cc79$1c7@male.EBay.Sun.COM>
Source record: 119445

In article aqe@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:

..text deleted..

>The sampling phase detector allows them to get around the traditional problem
>you have with reference frequency sidebands. Unfortunately, most ham designs
>use digital phase detectors patterned after the 4044. BTW, the MC145159
>synthesizer chip with sampling phase detector has a bug in it, so if you
>use it, be aware of the bug. The Philips sampling synthesizer chips have
>their own problems.
>

..text deleted..

>Rick Karlquist N6RK
>rkarlqu@scd.hp.com

Rick,

Would you care to elaborate on the bugs in the Moto '159 and Philips
sampling phase detector synthesizer chips?

Thanks,
Ray Anderson WB6TPU
raymonda@ebay.sun.com

783. Matching network design question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 16:41:19 UTC
From: andyw@aspen32.cray.com
Message-ID: <1993Sep29.114119.20104@hemlock.cray.com>
Source record: 119446

I'm experimenting with the Motorola 3363 receiver chip, and I'm trying
to come to grips with the matching network needed to provide a 50 ohm
input impedance. Specifically, I'm interested in 42MHz & 440 MHz, but
I'd like to be able to calculate for any frequency..

The data sheet & app notes specify the input impedance of the RF amp
transistor to be 180 ohm in parallel with 20pF at 50MHz. So far, so good.
They, unfortunately, do not specify what it becomes at 144 or 450 MHz.

The matching networks shown in the app notes are (I believe) called
"L networks" :-

```
C1 C2
o-------| |----+----| |--------o
|
50 Ohm 3 RF amp (Rp = 180, Cp = 20).
3 L1
|
o--------------+---------------o
```

The two examples they cite are :-

```
f (MHz) C1 C2 L1 (variable).
49.67 39pF 1nF 0.22uH
146 22pF 39pF 0.06uH
```

The only matching circuits I could find in my books were in "RF Transistors"
(Dye & Granberg, ISBN 0-750-69059-3, a book I think is excellent, FWIW)
page 119. None of which looked like that, so I chose this network :-

```
L1
o----+----nnnn----+----o
| |
50 Ohm === === RF amp
| C1 | C2
o----+------------+----o
```

and calculated the values for a Q of 10 @ 42 MHz (this will be a 1st IF
freq, so is my choice of 10 reasonable for Q ?). They came out to
be practical values (C1 = 390pF, C2 = 190pF, L1 = 100nH).

Since I've got no sanity check that these values are anywhere
near correct, and inadequate test equipment to just experiment
to find the best values (I'm sure I could get a "relative best",
but I'd have no idea if it was optimal or not), I was wondering
if anyone has the equations for the "L network" handy, at least
then I could compare with the app note values.

I also have forgotten how to convert Rp Cp values into Rs Cs values, I have to sheepishly admit.

Finally, although it's only a dorky little matching network, for some reason, it's a really good feeling to get into some books, look up a few formulas and actually figure out component values (even though I've got no idea if they're right or not :-)).

--
andyw N0REN/G1XRL

andyw@aspen.cray.com Andy Warner, Cray Research, Inc. (612) 683-5835

784. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 17:53:07 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28ci23$3vl@hpscit.sc.hp.com>
Source record: 119447

In article <28cc79$1c7@male.ebay.sun.com>,
Ray Anderson <raymonda@uranium.EBay.Sun.COM> wrote:
>
> Would you care to elaborate on the bugs in the Moto '159 and Philips
>sampling phase detector synthesizer chips?

The problem with the MC145159 is that the phase detector effectively
divides the variable frequency by two so you have to use half
the reference frequency you would normally need. For example,
to get 5 kHz. channel spacing, you have to use a 2.5 kHz. reference.
But you need to program N as if you were still using 5 kHz.
Motorola refuses to document this on the data sheet, hence wasting
everyone's time.

The problem with Philips chips has been poor documentation and support.
You just can't figure out how to optimally set up the phase detector
on the SAA1037. Also, the newer chips seem to be too focused on a
specific application and don't give you enough degrees of freedom
to modify them for ham use.

Rick N6RK
rkarlqu@scd.hp.com

785. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 18:58:25 UTC
From: dadams@cray.com
Message-ID: <1993Sep29.135825.27759@hemlock.cray.com>
Source record: 119449

In article aqe@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:

..text deleted..

>The sampling phase detector allows them to get around the traditional problem
>you have with reference frequency sidebands. Unfortunately, most ham designs
>use digital phase detectors patterned after the 4044. BTW, the MC145159
>synthesizer chip with sampling phase detector has a bug in it, so if you
>use it, be aware of the bug. The Philips sampling synthesizer chips have
>their own problems.
>

How does the MC44802 compare?

--David C. Adams Statistician Cray Research Inc. dadams@cray.com

Kilo Golf Zero India Oscar -(KG0IO)-

786. Re: Cavity amplifier design

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 20:17:27 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Sep29.201727.22001@ke4zv.atl.ga.us>
Source record: 119451
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sci.electronics

In article <29SEP199307483074@estd.nrl.navy.mil> malouf@estd.nrl.navy.mil (MALOUF, PERRY) writes:
>>For a long time I'm looking for the mathematics behind amplifier cavity
>>design. Designing an amplifier with a 1/4 (3/4 or 5/4) wavelength Lecher is
>>not a problem. The mathematics and formulas are widely available.
>>Theory and practice coincide well.
>>Looking at several cavity designs of tube amplifiers in the 1 - 3 GHz range
>>it seems that one mode is common: TEM101 (I'm not sure if this is correct).
>>One can determine that for a circular cavity the diameter is related
>>to half the wavelength and depends on the capacitance of the tube being used.
>>The height, mostly fixed due to the physical properties of the tubes,
>>determines the cavity impedance, I'm told.
>>I asked numerous SHF-heroes about the formulas behind the cavities. Nobody
>>could give me a satisfying answer. In fact, most 'designers' admitted that
>>they used the trail and error approach.
>>Looking in several books (electronic engeneering, physics, etc) the theory
>>behind cavities is explained. But I've never seen a publication where
>>a tube (read: capacitance) is introduced and with what effect on the physical
>>properties of the cavity.
>>I want to design an amplifier for 1296 MHz (23 cm amateurband) with a tube
>>but I don't want to use the 3/4:5/4 wavelength approach.
>>
>I'm not familiar with some of the terms (e.g. Lecher) you're using,
>and your brief description wasn't enough to allow me to fully
>understand your application. Therefore I cannot address your
>problem directly.

Lecher wires are an open wire transmission line segment with a movable
short used as a impedance transformer. This was a common way to measure
the wavelength of a microwave signal in the old days. Wavelength was
read directly from an attached meter stick when the short produced a
dip on a diode detector. Using them for a tank circuit is a straight
forward application of the Smith Chart.

[list of reasons an analytic solution is difficult deleted]

I'll second that list. This problem is not easily amenable to
analysis. There are a few special cases where it's somewhat
easier. Look at a re-entrant post cavity design. Use the plate
output capacitance as the post loading capacitor. That'll get
you a resonant design. Unfortunately it tells you little about
the position or shape and size of the output coupling loop.
That's going to be cut and try. With ordinary open cavities,
the major problem is parasitic responses. The usual cure is

to place passive "paddles" in the cavity at the proper point
to break the undesired resonant mode. The tube makers usually
supply a tech note with a working cavity design for their
product. You can often just scale it to your frequency, but
you'll still have to use some cut and try to get the final
circuit to work properly.

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

787. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 21:21:22 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28cu8i$h9t@hpscit.sc.hp.com>
Source record: 119450

In article <CE4FJM.5L6@ryn.mro4.dec.com>, <reilly@ricks.enet.dec.com> wrote:
>
> article <28ajfp$aqe@hpscit.sc.hp.com>, rkarlqu@scd.hp.com (Richard Karlquist) writes:
>|> ..... BTW, the MC145159
>|> synthesizer chip with sampling phase detector has a bug in it, so if you
>|> use it, be aware of the bug.....
>
>Where can I find information on the "bug". Is this for the -1 or -2 variant?

Well you won't have much luck getting information from Motorola :-(
I discovered the bug myself when I tried to use the stupid thing.

The bug is present in both variants.

>Could you post a quick description to the net?

See my other posting.

>Also, has anyone else noticed that the app note is not terribly instructive
>when it comes to using the frequency steering output?

Yup. You got that right. I've never figured out what that was good for.
I guess it was put in for GE, who was the customer they designed the chip
for in the first place.

>Other than that the 159 is a pretty neat chip.

Right again.

> Matt Reilly
> KB1VC

Rick Karlquist N6RK
rkarlqu@scd.hp.com

788. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-29 21:56:02 UTC
From: rkarlqu@scd.hp.com
Message-ID: <28d09i$ivj@hpscit.sc.hp.com>
Source record: 119452

In article <1993Sep29.135825.27759@hemlock.cray.com>,
David Adams <dadams@cray.com> wrote:
> article aqe@hpscit.sc.hp.com, rkarlqu@scd.hp.com (Richard Karlquist) writes:
>
>
> ..text deleted..
>
>
>>The sampling phase detector allows them to get around the traditional problem
>>you have with reference frequency sidebands. Unfortunately, most ham designs
>>use digital phase detectors patterned after the 4044. BTW, the MC145159
>>synthesizer chip with sampling phase detector has a bug in it, so if you
>>use it, be aware of the bug. The Philips sampling synthesizer chips have
>>their own problems.
>>
>
>How does the MC44802 compare?
>---
>--David C. Adams Statistician Cray Research Inc. dadams@cray.com
> Kilo Golf Zero India Oscar -(KG0IO)-

The MC44802 has a "Tri-State Phase Comparator" (as described on the data
sheet), which means it is patterned after the 4044 phase detector,
and will have the usual problem with reference frequency sidebands.
That, along with the fixed divide by 8 prescaler and choice of only
four reference frequency division ratios makes it fairly useless
for ham work, IMHO. BTW, "Tri-State" is a trademark of National Semiconductor
which Motorola blatantly pirated in their data sheet.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

789. Dummy Load question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-30 14:37:01 UTC
From: tcombs@dacapo.urbana.mcd.mot.com
Message-ID: <1993Sep30.143701.25644@urbana.mcd.mot.com>
Source record: 119456

I have been sssslllloowwwwly assembling my shack and now have a great transceiver at my disposal but lack a dummy load. I realize that you can buy them for 50-60 dollars but is there a less expensive alternative to this? My rig puts out 400 watts so I want to allow for
this power range. I remember back in the "good ole days" (middle to late 60's when I was just
a wee lad) my dad used a 200 watt light bulb as a dummy load on our 100 watt transmitter. But I don't know what SWR problems, impedance mismatch problems, or RF radiation problems would be caused by that. I looked at the dummy loads in the Handbook but it seemed that you could spend about the same amount of money in building it. Ideas?

Thanks
Tim
tcombs@urbana.mcd.mot.com

* I speak for no man but myself *

790. RE: Rick Campbell's R2/T2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-09-30 18:39:02 UTC
From: koehler@skyfox
Message-ID: <30SEP93.18390240@skyfox>
Source record: 119455

Second try - didn't realize BULLETIN doesn't autoformat

Anyway ... I did write to the address specified in
the QST articles for information about kits. I got
no reply to two letters written several m onths
apart. I guess there aren't any kits! Matching
inductors isn't a big problem but its costly to
buy large quantities just fo find matched paris.

Jim, VE5FP

791. Re: high speed datalink

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 01:58:42 UTC
From: trier@odin.ins.cwru.edu
Message-ID: <28g2si$4pq@usenet.INS.CWRU.Edu>
Source record: 119458
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

In article <27qf9iINNsl4@matt.ksu.ksu.edu>,
Eric L Patterson <electro@matt.ksu.ksu.edu> wrote:
>Does anyone have plans, or know where to get plans for a
>high speed 1.2 - 2.4G 1Mb/s (or faster) datalink? Preferably
>ethernet interface, but I'll take any other interface.

This isn't much like what you asked for, but the 1993 ARRL Handbook has
a description of a 10GHz 2Mb/s datalink plus voice channel. I dunno if
that's remotely applicable to your application, though! :-)

Stephen

--
Stephen Trier KB8PWA My other terminal is an ADM-3A.
Work: trier@ins.cwru.edu
Home: sct@po.cwru.edu :-)

792. Crystal price for commercial VHF rig?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 04:51:38 UTC
From: tpang@fraser.sfu.ca
Message-ID: <tpang.749451098@sfu.ca>
Source record: 119459

I just picked up a few OLD International Syscoms VTR71 series made for VHF radiotelephone used by the local telephone company. The formula of the crystal frequency is decided on the following:

TX: operating freq / 12; RX: (operating freq + 10.7MHz) / 12 .
So the crystals are around 12.xxxxxx MHz.

I wonder what is the going price of some 2m crystals? And is there a diff. in price for diff. accuracies? I just ordered 4 pairs, for $11.45 each (CDN). I hope I am not paying too much for them.

(I got these rigs for really cheap price, that's why I am concern about crystal price :).

I'll check this area, but e-mail is appreciated. Thanks in advanced.

Bye,
David

+---+
| In real life: David Tse E-mail: tpang@sfu.ca (Internet) |
| In amateur radio: VE7MDT Packet: VE7MDT@VE7UBC.#VANC.BC.CAN.NA |
| Snail Mail: P.O. Box 26052, Richmond B.C., V6Y 2B0, Canada. |
| Set-up: Amiga 3000/25, MAG MV-14S, AMaxII, ZyXEL 1496E, DeskJet+, HP48SX |
| Disclaimer: Anything here does not represent views of anyone except mine.|
+---+

793. Re: Voltage for delay relay?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 13:48:37 UTC
From: CSLE87@maccvm.corp.mot.com
Message-ID: <1993Oct1.135447.9489@schbbs.mot.com>
Source record: 119461

You're in luck! Amperite used a very simple numbering system back in
the pre-computer days: 6 Heater voltage
NO Contact is normally open, closes after dela
15 Seconds delay before contacts activate
Hope this helps.

---------- Original Article ----------
Path: schbbs!mothost!ftpbox!news.acns.nwu.edu!math.ohio-state.edu!howland.reston
From: STRICK@UGA.CC.UGA.EDU (Strick@UGA.cc.uga.edu)
Newsgroups: rec.radio.amateur.homebrew
Subject: Voltage for delay relay?
Date: Tue, 28 Sep 93 13:34:27 EDT
Organization: University of Georgia
Lines: 9
Message-ID: <16C57BEE4.STRICK@UGA.CC.UGA.EDU>
NNTP-Posting-Host: uga.cc.uga.edu
X-Newsreader: NNR/VM S_1.3.2

I recently picked up an Amperite Delay Relay with identification on
the box and glass body of "6N015". Box says: Heater: Prongs 2-3,
Relay: Prongs 5-7. I know I can start with a low voltage and work
my way up trial-n-error, but does anyone have the specs for the
heater voltage on this little gem? Thanks.
Strick

***** Bill Strickland ***** University of Georgia ***** Athens, GA *****

794. Voltage for delay relay?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 14:47:41 UTC
From: jangus@skyld.tele.com
Message-ID: <749486861snx@skyld.tele.com>
Source record: 119465

In article <16C57BEE4.STRICK@UGA.CC.UGA.EDU> STRICK@UGA.CC.UGA.EDU writes:

>
> I recently picked up an Amperite Delay Relay with identification on
> the box and glass body of "6N015". Box says: Heater: Prongs 2-3,
> Relay: Prongs 5-7. I know I can start with a low voltage and work
> my way up trial-n-error, but does anyone have the specs for the
> heater voltage on this little gem? Thanks.

That's 6NO15, 6.3 VAC fillament, Normally Open and 15 second delay.
Sounds like just the part for keeping the B+ from turning on before
the rest of the tubes heat up sufficiently (typical 11 second warm
up time).

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

795. Re: Dummy Load question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 15:51:25 UTC
From: msanders@sim.es.com
Message-ID: <msanders-011093085125@msanders.sim.es.com>
Source record: 119460

Dummy Loads:

I got mine at a swap meet for $5. I was going to make one using a paint can, oil, and an appropriately rated resistor, but found the swap meet first. When I get my antenna tuner with an included dummy load, my can of oil will be available.

--
==========
"standard disclaimer"

"He flies the sky KB7MSF
Like an Eagle in the eye Amateur Radio
of a hurricane that's abandoned." "Sandman"

America

796. aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 16:01:45 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Oct1.160145.10996@news.uiowa.edu>
Source record: 119462

AAAAAAAARRRRRRRGGGGGGGGHHHHHHHH!

It'd been a while since I'd soldered anything...so I decided to shorten the cord of the earplug I use with my HT...it was a bit too long, and the plug needed replacing anyway. So I chop it off and solder the new jack to the end of the cord, right? Beautiful job. Never done better, if I do say so myself.
I let it cool, then get ready to check it out. I plug the jack into the HT, run my finger up the cord to pull over the earplug...and come up against the jack I'd just trimmed off the end of the cord.

sigh

I guess there's a lesson in there somewhere.

Anybody know a good use for a patch cord?

73,

Doug N0YVW

--
__ /| | Douglas J Renze, N0YVW | Charter Member, Popular Front
\'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
=(___)= | drenze@icaen.uiowa.edu |
U | Douglas-Renze@uiowa.edu | Evolution Now!

797. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 18:24:54 UTC
From: davidc@lsid.hp.com
Message-ID: <CE8DtJ.HJ@hpcvsnz.cv.hp.com>
Source record: 119463

Douglas J Renze (drenze@icaen.uiowa.edu) wrote:
: AAAAAAAARRRRRRRGGGGGGGGHHHHHHHH!

: It'd been a while since I'd soldered anything...so I decided to shorten the
: cord of the earplug I use with my HT...it was a bit too long, and the plug
: needed replacing anyway. So I chop it off and solder the new jack to the
: end of the cord, right? Beautiful job. Never done better, if I do say so
: myself.
: I let it cool, then get ready to check it out. I plug the jack into
: the HT, run my finger up the cord to pull over the earplug...and come up
: against the jack I'd just trimmed off the end of the cord.

: *sigh*

: I guess there's a lesson in there somewhere.

: Anybody know a good use for a patch cord?

: 73,

: Doug N0YVW

: --
: __ /| | Douglas J Renze, N0YVW | Charter Member, Popular Front
: \'o.O' | +1 319 337 4664 | for Revolutionary Darwinism:
: =(___)= | drenze@icaen.uiowa.edu |
: U | Douglas-Renze@uiowa.edu | Evolution Now!

It really takes some courage to admit to doing something like this in such
a widely read forum... but it does remind me of the mistake I seem to make
over and over.

I solder the new jack to the end of the cord. Beautiful job. Never done better.
Then I discover that I forgot to slip the little cover that is supposed to get
put over the connections onto the cord first. Why can't I remember?

Dave, KB7QCL

798. PLL synthesis - novice question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 19:28:43 UTC
From: drs@ccd.harris.com
Message-ID: <1993Oct1.192843.4941@ccd.harris.com>
Source record: 119466

I have a Plessy Synthesiser IC handbook that is a few years old. Do they have anything out (new) that is particularly useful for Hams? I would like to play around with something that will generate a signal on the 14 mhz band only (just to experiment with maybe 1khz steps). Not knowing terribly much about PLL techniques, is the loop filter the tricky part of the design? In this experimental application I would think that lock up time wouldn't be too much of a concern for me. You PLL guru's probably don't have time for my sort of questions, but comments are welcome.

Doug, N4IJ

799. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 20:07:12 UTC
From: ehare@arrl.org
Message-ID: <2350@arrl.org>
Source record: 119464

In rec.radio.amateur.homebrew, davidc@lsid.hp.com (David Cook) writes:

>It really takes some courage to admit to doing something like this in such
>a widely read forum... but it does remind me of the mistake I seem to make
>over and over.

>I solder the new jack to the end of the cord. Beautiful job. Never done better.
>Then I discover that I forgot to slip the little cover that is supposed to get
>put over the connections onto the cord first. Why can't I remember?

Gee, Dave, I always remember to put the little cover ... on the FIRST
plug one of two that I solder onto a cable! :-).

73, Ed

Ed Hare, KA1CV ehare@arrl.org
American Radio Relay League
225 Main St.
Newington, CT 06111 The opinions expressed in my posts do
(203) 666-1541 - voice not necessarily represent League policy,
ARRL Laboratory Supervisor but I can probably get in trouble for
RFI, xmtr and rcvr testing them anyway.
-----

800. Butterworth Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-01 23:31:51 UTC
From: ilikecpu@nevada.edu
Message-ID: <1993Oct1.233151.964@nevada.edu>
Source record: 119467
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

Hello all,

Are there any electronic math wizards out there that can help me find an
equation that when given the number of elements N, a cutoff freq., and
the source and load Z's the equation will determine the L and C values
for a low pass Butterworth Filter ????

Any and all information regarding Butterworth mathematics will be appreciated.

Thanks,
Barrie

801. Re: Rick Campbell's R2/T2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 00:14:10 UTC
From: rohrwerk@orac.holonet.net
Message-ID: <CE8tzn.K7G@iat.holonet.net>
Source record: 119368

koehler@skyfox writes:

>Jim, VE5FP

Jim, that's all that got posted! Would love to know what you had to say,
as I posted this a while back.

John K0JD

802. aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 16:21:16 UTC
From: jangus@skyld.tele.com
Message-ID: <749578876snx@skyld.tele.com>
Source record: 119369

In article <2350@arrl.org> ehare@arrl.org writes:

> >It really takes some courage to admit to doing something like this in such
> >a widely read forum... but it does remind me of the mistake I seem to make
> >over and over.
>
> >I solder the new jack to the end of the cord. Beautiful job. Never done > better.
> >Then I discover that I forgot to slip the little cover that is supposed to get > >put over the connections onto the cord first. Why can't I remember?
>
> Gee, Dave, I always remember to put the little cover ... on the FIRST
> plug one of two that I solder onto a cable! :-).

I always remember too, but they just wont't screw on when you install them backwards.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

803. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 16:26:44 UTC
From: clifto@indep1.UUCP
Message-ID: <2516@indep1.UUCP>
Source record: 119373

In article <2350@arrl.org> ehare@arrl.org (Ed Hare - KA1CV) writes:
>In rec.radio.amateur.homebrew, davidc@lsid.hp.com (David Cook) writes:
>>I solder the new jack to the end of the cord. Beautiful job. Never done better.
>>Then I discover that I forgot to slip the little cover that is supposed to get
>>put over the connections onto the cord first. Why can't I remember?
>
>Gee, Dave, I always remember to put the little cover ... on the FIRST
>plug one of two that I solder onto a cable! :-).

After 26 years of soldering PL-259s onto coax, I've learned to ALWAYS put
BOTH "covers" on the coax before soldering EITHER connector.

Now, if I could only remember to put them both on in the right direction...
:-)

But that's nothing since I assembled a Wersi organ for a friend. I took
five identical daughterboards, and in mass-production style I decided to do
the tedious parts first, so I started soldering on the 64-pin Eurocard
connectors.
On the wrong side of each board.

And that after more than 20 years of _professional_ experience stuffing
PC boards, wiring prototypes, etc.!
--
+---+
| Cliff Sharp | clifto@indep1.chi.il.us OR clifto@indep1.uucp |
| WA9PDM | Use whichever one works |
+---+

804. Where do you get a 2N269

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 18:33:00 UTC
From: John.Seboldt@f31.n282.z1.tdkt.kksys.com
Message-ID: <749703671.AA05219@tdkt.kksys.com>
Source record: 119375

On 09-24-93, Dana Myers wrote to All:

>-----------------------------------
Where did you find these transistors? The number is extremely old, and
I don't know where to find them.

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

>-----------------------------------
No doubt you have to resort to the NTE, ECG, etc. replacement
semiconductor line. The 2N269 is cross-referenced to an NTE160 -- a
germanium PNP device!

But why bother? For an 80m circuit, there are plenty of similar circuits
using standard 2N2222 class devices. Check out Doug DeMaw's "QRP
Notebook" from ARRL, for example. Unless, like the antique radio
afficionados, you want to "get historic..."

John K0JD

---
* Freddie 1.2.5 * J.S. Bach of Borg: "Your style will be assimilated"

* Origin: Dark Knight's Table (1:282/31)

805. AM Stereo Add-in Possibi

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 18:52:02 UTC
From: John.Seboldt@f31.n282.z1.tdkt.kksys.com
Message-ID: <749703671.AA05220@tdkt.kksys.com>
Source record: 119376

On 09-28-93, Joseph Jesson wrote to All:

>-----------------------------------
The point was I tested the new super Denon unit next to the Lowe 150
with AM sysnc detector - no contest, the Lowe has a MUCH better RF
section, but NO stereo! I can add a board to demodulate AM stereo...

--
___--
Joseph Jesson joe@netcom.com Day (312) 856-3645 Eve (708) 356-6817
21414 W. Honey Lane, Lake Villa, IL, 60046
___--

>-----------------------------------

Fascinating project, but why bother? AM stereo is having a hard time
getting off the ground, along with AM broadcasting in general. A solid RF
section, with perhaps some bandwidth options for audio quality vs. QRM
reduction, are all you need.

John K0JD

___
* Freddie 1.2.5 * J.S. Bach of Borg: "Your style will be assimilated"

* Origin: Dark Knight's Table (1:282/31)

806. Anyone know how to increase the transmit power of CTX-55 by Deco Industries?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-02 22:02:56 UTC
From: rsilvers@finmark.nynexst.com
Message-ID: <1993Oct2.220256.5132@nynexst.com>
Source record: 119370
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

This transmitter puts out 60mw. It uses a 9v power supply. Would a 12v power supply increase the output power? (without cooking it). Any ideas on how to increase power closer to the legal 100mw limit? Thanks,

--Rob.

807. Re: Butterworth Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-03 00:54:24 UTC
From: gary@vulcan.com
Message-ID: <DLHTac1w165w@vulcan.com>
Source record: 119372
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

ilikecpu@nevada.edu (BARRIE HIERN) writes:

> Hello all,
>
> Are there any electronic math wizards out there that can help me find an
> equation that when given the number of elements N, a cutoff freq., and
> the source and load Z's the equation will determine the L and C values
> for a low pass Butterworth Filter ????
>
> Any and all information regarding Butterworth mathematics will be appreciated
>
> Thanks,
> Barrie
>

Unfortunately, there isn't a single equation, as far as I know. This is
a multi-step process. There are a number of good programs on the market
that do this...but if you are interested in the math, a fairly modern
reference that I recommend is:
Electrical Networks and Filters
author = G. H. Tomlinsonm
publisher = Prentice Hall
ISBN 0-13-248261-4

Generally, one transforms the problem into a low-pass filter, then finds
the poles, then transforms the problem back to a bandpass or highpass
(if needed), then does impedance scaling, and then synthesizes the
required network to implement the desired transfer function.

Good Luck

--

Gary Tennyson BellSouth Telecommunications, Inc.

Internet: gary@vulcan.com

808. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-03 03:50:51 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCEAyor.Jxt@netcom.com>
Source record: 119371

>I solder the new jack to the end of the cord. Beautiful job. Never done
> better.
>Then I discover that I forgot to slip the little cover that is supposed to get
>put over the connections onto the cord first. Why can't I remember?

Think it might be a requirement by the FCC that every ham must make this
mistake at least once in his career. :-)

809. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-03 19:22:59 UTC
From: ylo@osiris.kbfi.ee
Message-ID: <28n8qj$km5@osiris.kbfi.ee>
Source record: 119374

Thanks for the interesting details.
For those not directly involved, could you briefly explain
the difference between the Tri-State phase comparator
and the sample/hold phase comparator. References will
also be greatly appreciated.

Ylo Mets ylo@osiris.kbfi.ee

810. Re: Butterworth Filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 08:25:21 UTC
From: bencze@isl.stanford.edu
Message-ID: <BENCZE.93Oct4082521@isl.stanford.edu>
Source record: 119378
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

>> On Fri, 1 Oct 1993 23:31:51 GMT, ilikecpu@nevada.edu (BARRIE HIERN) said:
> Originator: ilikecpu@redrock.nevada.edu
> Nntp-Posting-Host: redrock.nevada.edu

> Are there any electronic math wizards out there that can help me find an
> equation that when given the number of elements N, a cutoff freq., and
> the source and load Z's the equation will determine the L and C values
> for a low pass Butterworth Filter ????

The ARRL Amateur Radio Handbook contains the normalized filter tables for
Butterworth filters -- as well as others -- and the frequency and impedance
scaling procedures. For an N-element filter, the tables will give the L
and C values for a filter with an Fc = 1/(2*pi) and a source/load impedance
of 1 ohm. It's a simple task to scale Fc and Rl to your required values,
as well as transform the filter to a high-pass, band-pass, or band-stop
configuration.

-Bill, KD6TOB

--
Bill Bencze bencze@isl.stanford.edu

811. Re: Rick Campbell's R2/T2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 13:15:54 UTC
From: epacyna@auratek.COM
Message-ID: <1174@auratek.COM>
Source record: 119380

In article <30SEP93.18390240@skyfox>, koehler@skyfox writes:
> Second try - didn't realize BULLETIN doesn't autoformat
>
> Anyway ... I did write to the address specified in
> the QST articles for information about kits. I got
> no reply to two letters written several m onths
> apart. I guess there aren't any kits! Matching
> inductors isn't a big problem but its costly to
> buy large quantities just fo find matched paris.
>
> Jim, VE5FP

Regarding your first problem, the R1 and R2 boards I've ordered took 4 - 6 months to get delivered from when I ordered and paid for them. All inquires regarding status when unanswered. Consider yourself lucky.

Regarding your issue of getting matched inductors. The Mouser parts are only $1.29 each and have a 5% tolerance. Odds are that if your buy 3 you'll have 2 that will be an acceptable match. Or build your own using pot cores from Amidon Assoc.

73

Ed W1AAZ

812. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 14:29:28 UTC
From: ehare@arrl.org
Message-ID: <2354@arrl.org>
Source record: 119377

In rec.radio.amateur.homebrew, wa2ise@netcom.com (Robert Casey) writes:

>>I solder the new jack to the end of the cord. Beautiful job. Never done
>> better.

>>Then I discover that I forgot to slip the little cover that is supposed to get
>>put over the connections onto the cord first. Why can't I remember?
>
>Think it might be a requirement by the FCC that every ham must make this
>mistake at least once in his career. :-)

Can I get any extra credit for making it far more than once? :-).

73, Ed

Ed Hare, KA1CV ehare@arrl.org
American Radio Relay League
225 Main St.
Newington, CT 06111 The opinions expressed in my posts do
(203) 666-1541 - voice not necessarily represent League policy,
ARRL Laboratory Supervisor but I can probably get in trouble for
RFI, xmtr and rcvr testing them anyway.
-----

813. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 16:07:19 UTC
From: jmaynard@nyx.cs.du.edu
Message-ID: <1993Oct4.160719.7071@mnemosyne.cs.du.edu>
Source record: 119379

In article <2354@arrl.org> ehare@arrl.org (Ed Hare - KA1CV) writes:
>Can I get any extra credit for making it far more than once? :-).

Multiple kids? :-)

Oh, you mean making the mistake of leaving off the connector shell. Well, if you do, let me know...how many PL-259s have YOU installed without the shell? (Don't ask me that question; I take the Fifth.)
--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"I picked this up at least eight times on my machine. Is this an RFD, or a mantra?" -- Robert L. McMillin

814. Re: Where do you get a 2N269

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 16:18:11 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <28pic3INNr9i@abyss.West.Sun.COM>
Source record: 119386

In article <749703671.AA05219@tdkt.kksys.com> John.Seboldt@f31.n282.z1.tdkt.kksys.com (John Seboldt) writes:
>On 09-24-93, Dana Myers wrote to All:
>
>>Where did you find these transistors? The number is extremely old, and
>>I don't know where to find them.
>
>No doubt you have to resort to the NTE, ECG, etc. replacement
>semiconductor line. The 2N269 is cross-referenced to an NTE160 -- a
>germanium PNP device!

Yup, I know.

>But why bother? For an 80m circuit, there are plenty of similar circuits
>using standard 2N2222 class devices. Check out Doug DeMaw's "QRP
>Notebook" from ARRL, for example. Unless, like the antique radio
>afficionados, you want to "get historic..."

My point exactly. I didn't want Jeff to think I was attacking him, but I really don't see the point in posting circuits from a book 25 years old (for which the parts are difficult to obtain) to the net.

Perhaps Jeff would like to offer suggestions on substitution for the obsolete parts, but that wasn't there.

There are numerous modern circuits which use common and readily available components, like 2N2222A and IRF511 transistors, but I don't see the point in making ASCII art of the circuit diagrams when you can easily obtain the entire articles, complete with circuit diagrams, notes and sources for parts, at your local library.

Another recommendation: The ARRL "QRP Notebook", either edition. Very good, worth buying.

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

815. Re: Ham-Homebrew Digest V93 #62

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 17:53:52 UTC
From: waltk@pica.army.mil
Message-ID: <9310041353.aa02386@COR5.PICA.ARMY.MIL>
Source record: 119381

Strick writes:

>I recently picked up an Amperite Delay Relay with identification on
>the box and glass body of "6N015". Box says: Heater: Prongs 2-3,
>Relay: Prongs 5-7. I know I can start with a low voltage and work
>my way up trial-n-error, but does anyone have the specs for the
>heater voltage on this little gem? Thanks.

Deciphering 6NO15, we have:
6 is the heater voltage, NO for normally open and 15 the delay before the
connects operate (in this case, close). Simple. 73 de Walt - K2WK

816. Re: Where do you get a 2N269

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-04 21:31:52 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <28q4o8INNrep@abyss.West.Sun.COM>
Source record: 119387

In article <28pic3INNr9i@abyss.West.Sun.COM> myers@sunspot.West.Sun.COM (Dana Myers) writes:
>
>Another recommendation: The ARRL "QRP Notebook", either edition. Very
>good, worth buying.
>

Oops! I meant to say the ARRL "QRP Classics". Very good...

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

817. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 01:25:31 UTC
From: dave@esi.COM.AU
Message-ID: <4608@eram.esi.COM.AU>
Source record: 119382

In article <1993Oct1.160145.10996@news.uiowa.edu>,
drenze@icaen.uiowa.edu (Douglas J Renze) writes:

[On chopping off the wrong end of an earphone cord]

| I guess there's a lesson in there somewhere.

Try soldering 8 or so wires to a mic connector, then notice you've
forgotten to first slip on the locking ring... That was three years
ago, and I can't be bothered fixing it.

| Anybody know a good use for a patch cord?

Patching into a tape recorder, another transmitter, station monitor...

--
Dave Horsfall (VK2KFU) VK2KFU @ VK2RWI.NSW.AUS.OC PGP 2.3
dave@esi.COM.AU ...munnari!esi.COM.AU!dave available

818. CMOS Logic <-> RS232?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 03:27:47 UTC
From: ksr@schunix.dmc.com
Message-ID: <1993Oct5.032747.8193@schunix.dmc.com>
Source record: 119383

Does anyone have a reasonably simple circuit for connecting a serial data connection at CMOS logic levels to an RS232 port? Specifically, the Yaesu FT411 "cloning" connection operates at CMOS levels, and I'd really like to be able to dump the 411 memory to a PC, modify the data, and squirt it back to the 411.

Thanks, Kevin WA1KLN

819. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 04:52:56 UTC
From: ben@nj8j.atl.ga.us
Message-ID: <Xu7wac2w165w@nj8j.atl.ga.us>
Source record: 119390

wa2ise@netcom.com (Robert Casey) writes:

> >I solder the new jack to the end of the cord. Beautiful job. Never done
> > better.
> >Then I discover that I forgot to slip the little cover that is supposed to g
> >put over the connections onto the cord first. Why can't I remember?
>
> Think it might be a requirement by the FCC that every ham must make this
> mistake at least once in his career. :-)

What's really embarrassing is when you do this twice....with the same
cord....on the same end(in the same work session :-)

Ben

+--------------------------------------+---------------------------------+
Ben Coleman NJ8J	"All that is not eternal is
AX.25: NJ8J@W4QO.#EAL.#ATL.GA.USA.NA	eternally out of date."
Internet: ben@nj8j.atl.ga.us	C. S. Lewis
+--------------------------------------+---------------------------------+

820. Re: Anyone interested in discussing PLL synt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 07:00:20 UTC
From: claude@bauv.unibw-muenchen.de
Message-ID: <claude.749804420@bauv106>
Source record: 119384

Please give me some recommandations for a design

covering all the amateur bands from 160 to 10 meters,
having an unique frequency standard,
having a frequency step in the order of 10 Hz.

It would be fine if the nominal frequency could be selected using
a commonly used encoding like BCD.

Thanks in advance.

Claude
--
Claude F.

This message may contain opinions which are not shared by my employer.
The facts can speak for themselves.

821. Re: CMOS Logic <-> RS232?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 13:17:00 UTC
From: lassini@egr.msu.edu
Message-ID: <28rs4c$sjp@msuinfo.cl.msu.edu>
Source record: 119385

ksr@schunix.dmc.com (ksr) writes:

>Does anyone have a reasonably simple circuit for connecting a serial data
>connection at CMOS logic levels to an RS232 port? Specifically, the
>Yaesu FT411 "cloning" connection operates at CMOS levels, and I'd really
>like to be able to dump the 411 memory to a PC, modify the data, and
>squirt it back to the 411.

>Thanks, Kevin WA1KLN

Take a look to the Maxim 232/233 chip - It includes all you need to drive
a serial port conforming to eia/rs-232 with a single 5 volts power supply
and 3 external caps [for the 232] or no external parts at all [for the 233].

You can request data sheets [and sometinmes samples] directly from Maxim.
their phone # is (408)737-7194.

I am not affiliated with maxim in any way --- I just love their products!!

Sam N8USY

822. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 15:47:16 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Oct5.154716.17125@ke4zv.atl.ga.us>
Source record: 119388

In article <4608@eram.esi.COM.AU> dave@esi.COM.AU (Dave Horsfall) writes:
>
>Try soldering 8 or so wires to a mic connector, then notice you've
>forgotten to first slip on the locking ring... That was three years
>ago, and I can't be bothered fixing it.

Ha! I can beat that. Try putting a connector on TV81 and forgetting
the shell. That's 81 tiny wires, including several tiny coaxes. I
hacksawed the shell, put it on and brazed it back together. :-)

Gary

--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

823. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-05 18:54:09 UTC
From: kstuart@oasys.dt.navy.mil
Message-ID: <49746@oasys.dt.navy.mil>
Source record: 119389

Well, I guess it's "CONFESSION IS GOOD FOR THE SOUL" time.

I enjoy sleeping in the dark.

One night I was lying awake, and when I looked over at my operating table / workbench, I saw a faint deep red glow.

Wondering what it was, I got out of bed and sauntered over to the rigs. The glow seemed to be atop the receiver (this was back in the old days), and was about a half inch in length and about a quarter inch in width.

Not bothering to turn on the light, I reached out for the unknown source of the glow and lifted it off of the receiver.

I believe the finger prints of my index finger and thumb still grace the metal barrel of that Ungar soldering pencil, which I had forgotten to unplug before I went to bed. &**&%$#^%* YIPES!!!!!!!!

Ken (more cautious, now) Stuart, W3VVN

824. Re: AM Stereo Add-in Possibilities

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 03:27:10 UTC
From: nick@bean.apana.org.au
Message-ID: <gate.ZXc1ac1w165w@bean.apana.org.au>
Source record: 119405
Cross-posted to: rec.radio.scanner,rec.radio.amateur.homebrew,rec.radio.shortwave

joe@netcom.com (Joseph Jesson) writes:

> Seems like someone should come out with an add-in AM stereo
>board. Radio-Electronics did a kit story a few years ago using
>the Motorola chip. In a side bar, a note indicated Circuit Specialists
>of Tuson Arizona had a complete kit. Well, I called them and the
>woman answering the phone said they no longer have anything like
>this. Oh well...

There was an AM Stereo kit available here in Australia to decode the Motorola system but it seems not to be available anymore. I have one, and providing the tuner is stable and the IF output is clean, it works well. Pity I can't say the same for the program quality.

If you are really interested, Email me and I'll do some more looking around for the kit.

Nick.

825. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 13:10:37 UTC
From: lkollar@nyx.cs.du.edu
Message-ID: <1993Oct6.131037.4177@mnemosyne.cs.du.edu>
Source record: 119391

gary@ke4zv.atl.ga.us (Gary Coffman) writes:

> Try putting a connector on TV81 and forgetting
>the shell. That's 81 tiny wires, including several tiny coaxes. I
>hacksawed the shell, put it on and brazed it back together. :-)
^^^^^^^^^^^^^^^^^^^^^^^^

How the heck did'ja do that w/o melting the cable???? Neoprene jacket?

About half the time I've made this boo-boo, I've been lucky enough that the other end of the cable was... what's the word here... "raw." I just slipped the shell over that end and ran it down to the connector. The other half the time I either bit the bullet or just threw up my hands and left the shell off.

I think that may be why I hate "doing" cables these days.
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think every ham
lkollar@nyx.cs.du.edu | should have to learn it.
"You mean you came back from the dead, to tell me I'm *odd*?"

826. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 13:18:17 UTC
From: system@hades.cdp.org
Message-ID: <931006.081817.1o5.rusnews.w165w@hades.cdp.org>
Source record: 119392

ehare@arrl.org (Ed Hare - KA1CV) writes:

> In rec.radio.amateur.homebrew, davidc@lsid.hp.com (David Cook) writes:
>
>>It really takes some courage to admit to doing something like this in such
>>a widely read forum... but it does remind me of the mistake I seem to make
>>over and over.
>
>>I solder the new jack to the end of the cord. Beautiful job. Never done bett
> er.
>>Then I discover that I forgot to slip the little cover that is supposed to g
> et
>>put over the connections onto the cord first. Why can't I remember?
>
> Gee, Dave, I always remember to put the little cover ... on the FIRST
> plug one of two that I solder onto a cable! :-).

Yeccch.... I hate when I put PL-259's on two ends of coax and forget to
slide the damned sleeve on first.

Tony

```
--------------------------------------------------------------------------
o o Tony Pelliccio, KD1NR, Control Op 441.750+, ARRL VE
\ / system @ hades.cdp.org Soon W5YI VE
\__/
_______(oo) Cow humor. Sort of like the Far Side.
/| ___ \/
/ | {MTV}|| MoooTV - Rockin' Bumpin' and Funkin' into the 90's
* ||{___}||
||-----|| (And people thought my last .sig was long, ha!)
^^ ^^ ------------------------------------------------------------
```

827. AAUUUUGGGHHHH!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 13:56:19 UTC
From: ham@wam.umd.edu
Message-ID: <28uiq3$dou@cville-srv.wam.umd.edu>
Source record: 119393

Ever soldered a PL-259 on a piece of coax?

Preparing for Field Day in Canada, I had to solder a PL-259, with insert, onto a piece of RG-58 that was about 100 feet long. Since it already had one PL-259 on one end, I made sure the cable & PL-259 wasn't shorted by putting a meter across it. I then stripped the other end of the cable, and checking for continuity in the cable, I shorted the other end (with the PL-259 already installed) with a paper clip, and proceeded to verify that the cable was good.

So I put the connector on just like I had been taught. Perfect job, but I was concerned that it had taken so long to solder the shield on, and that I had dumped a LOT of solder into the center conductor connection. Maybe there would be a short due to the solder, I thought. So I let it cool a little, pulled out the meter, and tested it. DEAD SHORT! I was so upset that I pulled out the wire cutters and hacked off the beautifully soldered PL-259 in disgust, taking about 1" of coax with it.

"I can't believe this," I thought to myself. I decided to check the connector again - wide open - no short. Hmmm. I then picked up the cable and checked it for shorts. It was shorted. Then I remembered the paper clip.

AAUUUUUUGGGHHHHH!!!!

And then there was the time that I cut the strain relief on my speaker-mic in order to get to the break in the cable, because it crackled when I jiggled it - I was SURE it was in the wire. The speaker connector on the PC board had a cracked solder joint.

--
73, _________ _________ The
\ / Long Original
Scott Rosenfeld Amateur Radio NF3I Burtonsville, MD | Live $5.00
WAC CW/SSB WAS 95% of the way to DXCC _____________| Dipoles! Antenna!

828. Novice asks: Transmitting video & capture it to PC

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 14:32:44 UTC
From: brogan@access.digex.net
Message-ID: <28ukuc$bde@access.digex.net>
Source record: 119394

I would like to know if there are books available that show how to create a system that will take a "snapshot" picture from a camera, transmit that image, receive it and decode it on a PC. This may sound like a trival question but I have as much know-how on this subject as a loaf of bread does.

Also, if anyone here can make such a system, please privately e-mail me with your rates, etc. I am a very quick study so if a book can show how to make it, I'd give it a try.

Thank You
John Brogan

P.S., the transmission distance will be approx. 225,000 miles (no joke)

--

Brogan & Associates * Box 7607 * Gaithersburg * MD * 20898 * brogan@digex.net
---

829. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 19:20:30 UTC
From: dickrb@lsid.hp.com
Message-ID: <CEHpq7.45D@hpcvsnz.cv.hp.com>
Source record: 119395

All of this reminds me of the time my mother was repairing worn-out bluejeans. She would cut out/off parts from 'good' sections and sew them together to make something we could wear to school.

After much work she held up the pants 2c how the new sewn-on-leg looked only to discover that she had moved one leg to the other!!

Dick - w7wkr

830. VACUUM TUBE SOURCE NEEDED

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-06 22:30:40 UTC
From: lgm327@cbnewsi.cb.att.com
Message-ID: <CEHyJ6.7IG@cbnewsi.cb.att.com>
Source record: 119396
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew

VACUUM TUBE SOURCE NEEDED!

I'm looking for a source for vacuum tubes... I need a 6JE6A or 6LQ6 tube for an old RCA TV that I am trying to repair. If anyone knows of a source to obtain vacuum tubes (other than Radio Shack, which wants an ungodly price for this tube), please respond via e-mail.

Thanks much,

Larry
lgm327@ih.att.com

831. Re: AAUUUUGGGHHHH!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 02:09:04 UTC
From: henrys@feenix.metronet.com
Message-ID: <CEI8n5.JFy@feenix.metronet.com>
Source record: 119397

: AAUUUUUUGGGHHHHH!!!!

One field day, I set up my trusty satellite station in my Volkswagen
camper there at the fd site. After a couple of unsuccessful passes,
someone pointed out that the 10 meter beam was pointing the opposite
direction from the 2 meter beam. Ever tried to work a satellite
via *long path*?

--
Henry B. Smith - NA5K | henrys@feenix.metronet.com
1380 Camino Real | Home phone (214) 562-3049
McKinney, TX 75069 | Office phone (214) 333-6077

832. Re: Novice asks: Transmitting video & capture it to PC

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 09:19:40 UTC
From: dtock@nyx.cs.du.edu
Message-ID: <1993Oct7.091940.11088@mnemosyne.cs.du.edu>
Source record: 119398

In article <28ukuc$bde@access.digex.net> brogan@access.digex.net (Brogan and Associates) writes:
>
>P.S., the transmission distance will be approx. 225,000 miles (no joke)
>
Interesting...
Who do you know who lives on the moon? 225,000 miles is about a one way trip, isn't it?
Either that, or 9 times round a great circle... :-)

833. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 13:07:13 UTC
From: jwl@ferrari.cray.com
Message-ID: <1993Oct7.080713.9590@walter.cray.com>
Source record: 119399

In all of this I haven't seen anyone admit to my most common AH SH**, and that is etching a pc board, how do you say it? Upside down, inside out? Makes it rather hard applying solder to the component side of the board, but one side of the board does look nice. No parts or lands to mess up the shiny surface!

When will we have a black box that we feed a schematic into, drop a bare board into and out pops a etched, plated through holes board out the back?

How many cables are missing the cover/other half of the coax connector, etc. in my shack? Most of them.....

Jim.

--

Jim Lynch, Sales Analyst, Cray Research, Inc. / ARS: K4GVO
Southeast District, Phone: (404) 631-2254, Email: jwl@sedist.cray.com
Suite 270, 200 Westpark Drive, Peachtree City, GA 30269

834. Need 1n270 diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 13:19:39 UTC
From: jwl@ferrari.cray.com
Message-ID: <1993Oct7.081940.9759@walter.cray.com>
Source record: 119400

Does anyone know where I can find a supply of 1n270 diodes? I have a couple of projects/repairs to make that need them and I have looked in every catalog I have gotten for a couple of years and haven't seen them listed. I'd rather not have to order them from someone with a $50 minumum, though.

Any ideas?

Thanks,
Jim.

--

Jim Lynch, Sales Analyst, Cray Research, Inc. / ARS: K4GVO
Southeast District, Phone: (404) 631-2254, Email: jwl@sedist.cray.com
Suite 270, 200 Westpark Drive, Peachtree City, GA 30269

835. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 19:25:16 UTC
From: John Hassler <HASSLER@MAINE.MAINE.EDU>
Message-ID: <93280.152516HASSLER@MAINE.MAINE.EDU>
Source record: 119402

An old technician once told me that if there are two ways to hook something up, you have to do it three times. You hook it up, it's wrong, so you turn it around, ... and discover that it was right the first time. Always.
john

836. Re: Need 1n270 diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 19:57:49 UTC
From: alanb@sr.hp.com
Message-ID: <CEJM4E.8tu@srgenprp.sr.hp.com>
Source record: 119401

Jim Lynch (jwl@ferrari.cray.com) wrote:
: Does anyone know where I can find a supply of 1n270 diodes?

I think the 1N270 is an old point-contact diode. If so, a good
substitute would be any small-signal Schottky diode.

AL N1AL

837. Re: Need 1n270 diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 22:21:07 UTC
From: haynes@cats.ucsc.edu
Message-ID: <2924oj$9l8@darkstar.UCSC.EDU>
Source record: 119403

In article <1993Oct7.081940.9759@walter.cray.com> jwl@ferrari.cray.com (Jim Lynch) writes:
>Does anyone know where I can find a supply of 1n270 diodes? I have a couple of
>projects/repairs to make that need them and I have looked in every catalog
>I have gotten for a couple of years and haven't seen them listed. I'd rather not

I guess it's pretty hard to make diodes that bad anymore :-) Seems like I
got some a while back from one of the hobbyist-type suppliers like Jameco,
but it's been quite a few years. I would imagine almost anything
advertised as a germanium signal diode these days would do.

Wonder if you could use something like a silicon Schottky diode? Don't they
have low voltage drop like germanium diodes do? (That's why I'm posting
this to the net rather than in email; I'd like to know the answer to that
question.)
--
haynes@cats.ucsc.edu
haynes@cats.bitnet

"Ya can talk all ya wanna, but it's dif'rent than it was!"
"No it aint! But ya gotta know the territory!"
Meredith Willson: "The Music Man"

838. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-07 22:22:30 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Oct7.222230.2232@cyphyn.radnet.com>
Source record: 119404

Jim Lynch (jwl@ferrari.cray.com) wrote:
:
: In all of this I haven't seen anyone admit to my most common AH SH**, and that is
: etching a pc board, how do you say it? Upside down, inside out? Makes it
: rather hard applying solder to the component side of the board, but one side
: of the board does look nice. No parts or lands to mess up the shiny surface!

That is HOW they invented 'surface mount'.....doing the board inside out...
then, to have the parts pins line up, they had to do it all on one side.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

839. Re: Need 1n270 diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 16:09:20 UTC
From: steve@hicomb.hi.com
Message-ID: <steve-081093120246@brainiac.hi.com>
Source record: 119406

Ocean State Electronics
1-800-866-6626
$10.00 minimum order

1N270 germanium diode, 100 PRV 200 mA, qty 1-9: $0.35 each, qty 10+ $0.30 each, qty 100+ $0.25 each

Steve Byan internet: steve@hicomb.hi.com
Hitachi Computer Products (America), Inc.
1601 Trapelo Road phone: (617) 890-0444
Waltham, MA 02154 FAX: (617) 890-4998

840. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 17:29:30 UTC
From: tarumph@uncc.edu
Message-ID: <CEL9x7.F5o@unccsun.uncc.edu>
Source record: 119407

This reminds me ...

I'd just gotten some Bury-8 cable from a hamfest, and installed it instead
of the RG58 I had been using to a vertical colinear on 2m.
A few months later, I put together a log-periodic Yagi, also for two meters.
Checked SWR on the ground, and everything was fine. I put it up and SWR was about 2.5.
THEN I checked the cable. Dead short. I cut off the end in the shack, still a dead
short. Climb up on the roof, pull down the coax, cut off the other connector, cable's
OK.
Problem was, Center conductor is larger on the Bury 8 because of the foam
dielectric. Several strands folded under the connector and shorted to the shell ...

73 de Tim
KD4OWS@WB4KDF.#GAS.NC.USA.NA

841. Soldering silliness

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 20:26:24 UTC
From: bbattles@arrl.org
Message-ID: <2415@arrl.org>
Source record: 119410

In rec.radio.amateur.homebrew, drenze@icaen.uiowa.edu (Douglas J Renze) writes:
>
>It'd been a while since I'd soldered anything...so I decided to shorten the
>cord of the earplug I use with my HT...it was a bit too long, and the plug
>needed replacing anyway. So I chop it off and solder the new jack to the
>end of the cord, right? Beautiful job. Never done better, if I do say so
>myself.
> I let it cool, then get ready to check it out. I plug the jack into
>the HT, run my finger up the cord to pull over the earplug...and come up
>against the jack I'd just trimmed off the end of the cord.
>
>*sigh*

Wow! As a dyed-in-the-wool 10-thumbed appliance operator type, I'm always amazed at how you high-tech guys think things up--imagine, solder two wires and >BINGO< ... a full-duplex earphone cable!

Or if you plug one end into the audio out jack and one into the mike in jack, does it make the radio a closed-circuit repeater?

Patent it quick, Man!

CUL es 73 de BB

"""
Brian Battles, WS1O I Tel 203-666-1541, ext 222 I "Radio amateurs
QST Features Editor I Fax 203-665-7531 I do it with high
ARRL HQ I Internet bbattles@arrl.org I frequency"
Newington, CT USA I Amprnet ws1o@ws1o.ampr.org [44.88.0.87]
"""

COMMENTS EXPRESSED HEREIN ARE MY OWN PERSONAL REMARKS AND ARE NOT TO BE
CONSIDERED OFFICIAL ARRL VIEWS OR POLICY..

842. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 20:31:45 UTC
From: bbattles@arrl.org
Message-ID: <2414@arrl.org>
Source record: 119409

In rec.radio.amateur.homebrew, davidc@lsid.hp.com (David Cook) writes:
>> Douglas J Renze (drenze@icaen.uiowa.edu) wrote:
>>
>> It'd been a while since I'd soldered anything...
>>
>> *sigh*
>>
>> I guess there's a lesson in there somewhere.
>>
>> Anybody know a good use for a patch cord?

> ...reminds me of the mistake I seem to make over and over.
>
> I solder the new jack to the end of the cord. Beautiful job. Never done
> better. Then I discover that I forgot to slip the little cover that's
> supposed to get put over the connections onto the cord first. Why can't
> I remember?

Yeah, and I have a similar problem with certain marital aids. *sigh*

CUL es 73 de BB

"""
Brian Battles, WS1O I Tel 203-666-1541, ext 222 I "Radio amateurs
QST Features Editor I Fax 203-665-7531 I do it with high
ARRL HQ I Internet bbattles@arrl.org I frequency"
Newington, CT USA I Amprnet ws1o@ws1o.ampr.org [44.88.0.87]
"""

COMMENTS EXPRESSED HEREIN ARE MY OWN PERSONAL REMARKS AND ARE NOT TO BE
CONSIDERED OFFICIAL ARRL VIEWS OR POLICY..

843. Outstanding technical competence.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 20:35:47 UTC
From: bbattles@arrl.org
Message-ID: <2416@arrl.org>
Source record: 119411

In rec.radio.amateur.homebrew, wa2ise@netcom.com (Robert Casey) writes:
>>I solder the new jack to the end of the cord. Beautiful job. Never done
>>better. Then I discover that I forgot to slip the little cover that's
>>supposed to get put over the connections onto the cord first. Why can't
>>I remember?

>Think it might be a requirement by the FCC that every ham must make this
>mistake at least once in his career. :-)

Say, does this mean I get extra credit? I've done it at least a dozen
times! (Earphone cable, several kinds of coax, mike cables, patch cords,
etc.) You see what 15+ years of experience in Amateur Radio, broadcasting
and professional recording can offer? Lots of challenging opportunities
to screw up!

CUL es 73 de BB

"""""""

844. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-08 20:45:57 UTC
From: bbattles@arrl.org
Message-ID: <2417@arrl.org>
Source record: 119412

In rec.radio.amateur.homebrew, kstuart@oasys.dt.navy.mil (Kenneth Stuart) writes:
>
>One night I was lying awake, and when I looked over at my operating
>table/workbench, I saw a faint deep red glow.
>
>The glow seemed to be atop the receiver (this was back in the old days),
>and was about a half inch in length and about a quarter inch in width.
>
>Not bothering to turn on the light, I reached out for the unknown source
>of the glow and lifted it off of the receiver.
>
>I believe the finger prints of my index finger and thumb still grace
>the metal barrel of that Ungar soldering pencil, which I had forgotten
>to unplug before I went to bed. &**&%$#^%* YIPES!

Lucky you're not a smoker...ya mighta popped it into your mouth and started
to take a drag before.....no, it's too ugly!

CUL es 73 de BB

"""
Brian Battles, WS1O I Tel 203-666-1541, ext 222 I "Radio amateurs
QST Features Editor I Fax 203-665-7531 I do it with high
ARRL HQ I Internet bbattles@arrl.org I frequency"
Newington, CT USA I Amprnet ws1o@ws1o.ampr.org [44.88.0.87]
"""

COMMENTS EXPRESSED HEREIN ARE MY OWN PERSONAL REMARKS AND ARE NOT TO BE
CONSIDERED OFFICIAL ARRL VIEWS OR POLICY..

845. Re: Need 1n270 diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-09 03:59:25 UTC
From: rohrwerk@orac.holonet.net
Message-ID: <CEM332.Jz2@iat.holonet.net>
Source record: 119408

alanb@sr.hp.com (Alan Bloom) writes:

>Jim Lynch (jwl@ferrari.cray.com) wrote:
>: Does anyone know where I can find a supply of 1n270 diodes?

>I think the 1N270 is an old point-contact diode. If so, a good
>substitute would be any small-signal Schottky diode.

>AL N1AL

Well, it's a point-contact GERMANIUM diode. Significant difference if you want lower forward voltage drop. I used the NTE replacement for the 1N270 in the Signal/One CX7A I'm resoring -- it's in a control circuit where they want the positive swing of the T/R lines to be limited to 0.3 volt. Surprisingly, the 1N34's I had from Radio Shack didn't hold it to that voltage!

John K0JD

846. ** FLEA at MIT ** Sunday October 17th Cambridge MA

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-09 05:06:15 UTC
From: w1gsl@athena.mit.edu
Message-ID: <295gs7$s86@senator-bedfellow.MIT.EDU>
Source record: 119413
Cross-posted to: rec.radio.swap,rec.radio.amateur.misc,rec.radio.info,sci.electronics,ne.forsale,ne.general,misc.forsale.computers.d,rec.radio.amateur.homebrew

The Last one this year...

Now TWICE the number of outdoor Tailgate spaces are available...

********* $1 buyers discount with hardcopy of this notice ********

COMPUTERS - ELECTRONICS - HAM RADIO - COMPUTERS - ELECTRONICS

FLEA all SUMMER at MIT
October 17th, 1993
9AM-2PM

Come to the city for a great flea - plenty of free parking.

MIT's electronics and ham radio flea will take
place on the third Sunday of each month this summer,
April thru October.

There is tailgate space for over 600 sellers and
free, off-street parking for >1000 cars!

Buyers admission is $2 (you get $1 off if
you're lucky enough to have a copy of our ad)
and sellers spaces are $10.00-each at the gate.

The flea will be held at the corner of Albany and
Main streets in Cambridge; right in the Kendall
Square area from 9AM to 2PM, with sellers set-up
time starting at 7AM.

!! RAIN or SHINE !! Have no fear of rain, a covered
tailgate area is available for all sellers (6'8" clearance).

Talk-in: 146.52 and W1XM/R-449.725/444.725 (PL 114.8/2A).

Sponsors: MIT Electronics Research Society
MIT UHF Repeater Association (W1XM)
MIT Radio Society (W1MX)
Harvard Wireless Club (W1AF)

For more info / advanced reservations 617 253 3776

********** $1 buyers discount with hard copy of this notice ***********

****
Steve Finberg W1GSL w1gsl@athena.mit.edu
PO Box 82 MIT Br Cambridge MA 02139 617 258 3754

****

847. Project 10: A BFO for your $40 SW rcvr

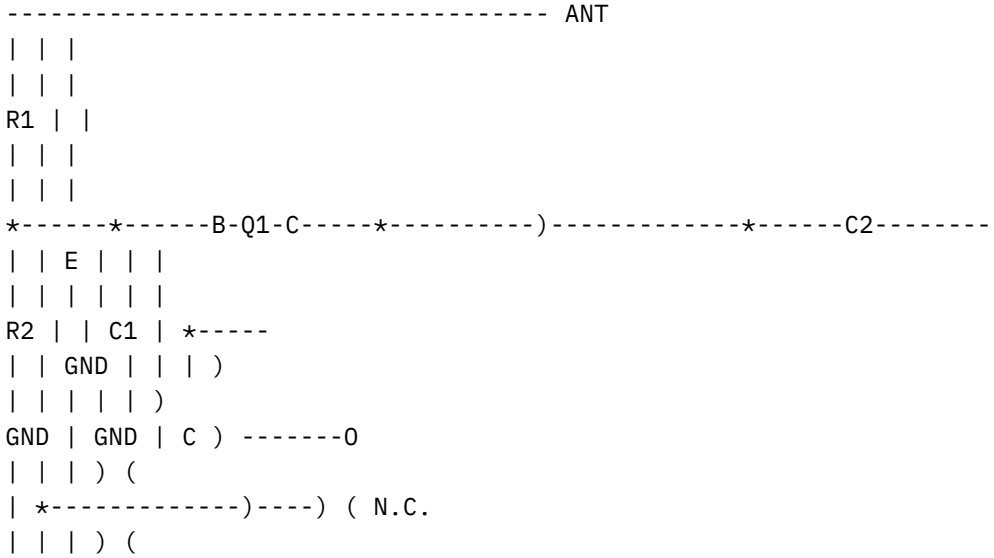
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-09 22:44:53 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CEnJ6t.79v@news.Hawaii.Edu>
Source record: 119414
Cross-posted to: rec.radio.shortwave,rec.radio.amateur.homebrew

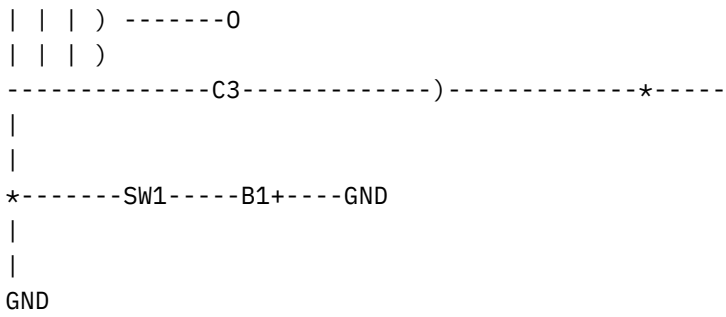
It seems there are quite a few cheapie shortwave receivers out there that have everything (synthesizer tuning, digital readout, fairly good specs) but lack the all important BFO to copy SSB and CW. Well, let's remedy that problem right now. The heart of this project is a 455 kHz IF transformer: go to your closest junked broadcast radio receiver and steal one from there.

If you are reading this on rec.radio.shortwave you may skip this paragraph; if you are reading this on rec.radio.amateur.homebrew or on the QRP mailgroup here's a neat idea: get one of these cheapie SW rcvrs and after installing this BFO you'll have a great companion to any of the simple transmitters I've been posting! Let's face it, xmtrs are easy to build, but rcvrs certainly require more care; for $40 you can pick up one of these synthesized digital readout pups and have a complete backpack transmitter-receiver pair.

PARTS LIST

Q1 2N544 transistor
C1 15 pfd variable capacitor
C2 .001 mfd
C3,4 .01 mfd
R1 7.5K resistor
R2 5.1K
B1 1.5 VDC battery
T1 Miller #9-C2 IF transformer
SW1 SPST switch





Recall: Q1 is marked B=base, C=collector, E=emitter; the case of Q1
MUST be grounded; GND=ground; note the polarity of B1.
Now, the unmarked capacitor, C, and its associated transformer, are
inside the can of the IF transformer; if you remove the can you'll
see where to make the connections. N.C. means not connected - while
you have the can off you'll have to cut those leads. Also, screw the
tuning screw slug all the way out. After you've put everything together
set C1 about midway. Adjust the transformer slug until it resonates
at 455 kHz, which can be accomplished using a receiver or GDO. AS
you tune the slug (using the receiver) you should hear the heterodyne note
of the BFO lowering in pitch until it eventually zero-beats. Stop tuning
at this point. The BFO antenna can be any piece of hookup wire wrapped
around the antenna wire near (or even inside of) the receiver. Whenever
you want to copy CW or SSB, merely flick on SW1.

Jeff NH6IL

848. aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-10 06:25:31 UTC
From: jangus@skyld.tele.com
Message-ID: <750234331snx@skyld.tele.com>
Source record: 119417

In article <2414@arrl.org> bbattles@arrl.org writes:

> Yeah, and I have a similar problem with certain marital aids. *sigh*

Been there, done that.....

The positive note is that (so far) I haven't gotten any hair caught in a
PL-259 connector yet.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

849. Etching

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-10 16:03:29 UTC
From: wsundern@world.std.com
Message-ID: <CEov9u.A5v@world.std.com>
Source record: 119415

Could someone give me a reference (books, mags, files, etc) on
etching my own PC Boards? I'm looking for information as to
the various methods available for etching as well as equipment
and step-by-step instructions. Any help will be appreciated.
.
.
Wes (wsundern@world.std.com)

850. Re: Project 10: A BFO for your $40 SW rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-10 17:39:01 UTC
From: trier@odin.ins.cwru.edu
Message-ID: <299hbl$ge1@usenet.INS.CWRU.Edu>
Source record: 119416
Cross-posted to: rec.radio.shortwave,rec.radio.amateur.homebrew

In article <CEnJ6t.79v@news.hawaii.edu>,
Jeff Herman <jherman@uhunix3.uhcc.Hawaii.Edu> wrote:
> |
> *-------SW1-----B1+----GND
> |
> |
> GND

This part of the circuit bothers me. I looks to me like SW1 is
controlling a short across the battery. Am I misreading your
notation?

--
Stephen Trier KB8PWA "[I]t's time to put your power supply under the
Work: trier@ins.cwru.edu cardboard pyramid in the fridge with the oranges
Home: sct@po.cwru.edu and razor blades under it....Failing that, check
the pass transistors." - jangus@skyld.tele.com

851. HELP Easytrax

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-11 12:59:58 UTC
From: bob.berlyn@chowda.sbs.com
Message-ID: <93101110495843@chowda.sbs.com>
Source record: 119268

Hello,

Does any one know an easy way to deal with Protel Easytrax to place components on the mirror image of the PC board - ie not the solder side. This is usually not a problem except that when a PC board was designed containing a couple of 8 pin IC's the pinouts were wrong because the IC is installed in the non solder side of the board.

Thanks
Bob Berlyn
N1PWU

852. More "Aaaaaaaaarrrgh!" tales.....

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-11 18:05:00 UTC
From: lee@tosspot.sv.com
Message-ID: <2eP0ac2w165w@tosspot.sv.com>
Source record: 119270

.....my tip is to never solder when wearing socks made out of synthetic materials - you get one of thos lil' balls of molten solder fall on to the sock which then melts and holds the solder blob snugly against your foot!

...hm, don't try it in nylon b.v.d.s, either......

Lee

853. Dual plug

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-11 18:20:37 UTC
From: kharker@bnr.ca
Message-ID: <29c85l$qkl@crchh941.bnr.ca>
Source record: 119269
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.digital.misc

me explain. Eventually, I am going to be building a new cable to go from
the back of my tnc and into the top of my present or future ht. The connector
on the tnc end of things is a simple DB-9, so that's not a problem. What I
am wondering about is the ht end. I am only going to have one vhf radio for
quite a while, so my ht will have to serve as my packet station, my mobile
voice station, and my base voice station. I will therefore need to be plugging
and unplugging this future cable quite a bit. The top of almost all ht's (mine
included) have two plugs - a min and sub-mini - for speaker and mic respectively.
As far as I can tell, all ht's use the same spacing between these two plugs as
well.
Now, this may seem like a pretty silly problem, and it may even boil
down to just a matter of aesthetics. I would like to just plug in and pull out
a single plug rather than two. I would like the cable to have one and only
one connector on each end, rather than one connector on the tnc end and two
connnectors on the ht end. I've given up on trying to find a source that
makes the mini-and-sub-mini-plugs-in-one connector (although I have seen it on
enough remote speaker mics and MFJ's pre-fab packet cables to have held out
hope...), so I am wondering if anyone else has tried to build some sort of
casing to hold the two plugs in their appropriate seperation, and is sturdy
enough to allow for a lot of plugging and unplugging. Perhaps using heat shrink
tubing? Nylon wire ties? Cutting open a stereo headphone Y connector and gluing
it back together with cryocanalate (sp?) glue?
Or, alternatively, does anyone have a damaged, destroyed, mutilated, or
otherwise useless ht speaker mic with the mini-and-sub-mini-plugs-in-one
connector on it that they'd be willing to donate/sell to me so I could try and
use that connector?

Any ideas on this are appreciated.

_ken/n1pvb

--
==
Kenneth E. Harker Bell Northern Research "Any opinions expressed
kharker@bnr.ca Richardson, Texas, USA are solely mine and do
N1PVB (214) 684-5115 not represent BNR"
==

854. Re: Etching

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-11 18:33:04 UTC
From: markz@ssc.com
Message-ID: <1993Oct11.183304.21812@ssc.com>
Source record: 119276

Wes Sunderman (wsundern@world.std.com) wrote:
: Could someone give me a reference (books, mags, files, etc) on
: etching my own PC Boards? I'm looking for information as to
: the various methods available for etching as well as equipment
: and step-by-step instructions. Any help will be appreciated.

Electronic Prototype Construction
Stephen D. Kasten
Sams, 1983

Electronics Now (magazine)
September 1993

Mark Zenier markz@ssc.wa.com markz@ssc.com

855. Re: Project 10: A BFO for your $40 SW rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-12 03:16:06 UTC
From: rohrwerk@orac.holonet.net
Message-ID: <CErL2w.BtG@iat.holonet.net>
Source record: 119271
Cross-posted to: rec.radio.shortwave,rec.radio.amateur.homebrew

>It seems there are quite a few cheapie shortwave receivers out there that
>have everything (synthesizer tuning, digital readout, fairly good specs)
>but lack the all important BFO to copy SSB and CW. Well, let's remedy that

A far, far, better solution is the synchronous detector project in a
recent QST (the issue is not now easily found :-( ). It serves as
BFO/product detector.

Again, let's not waste net bandwidth with ancient history. Find a classic
radio newsgroup or something for this!

John K0JD

856. Re: Project 10: A BFO for your $40 SW rcvr

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-12 09:29:28 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CEs2D5.L66@news.Hawaii.Edu>
Source record: 119272
Cross-posted to: rec.radio.shortwave,rec.radio.amateur.homebrew

In article <299hbl$ge1@usenet.INS.CWRU.Edu> trier@odin.ins.cwru.edu (Stephen C. Trier) writes:
>In article <CEnJ6t.79v@news.hawaii.edu>,
>Jeff Herman <jherman@uhunix3.uhcc.Hawaii.Edu> wrote:
>> |
>> *-------SW1-----B1+----GND
>> |
>> |
>> GND
>
>This part of the circuit bothers me. I looks to me like SW1 is
>controlling a short across the battery. Am I misreading your
>notation?
>
>--
>Stephen Trier KB8PWA "[I]t's time to put your power supply under the
>Work: trier@ins.cwru.edu cardboard pyramid in the fridge with the oranges
>Home: sct@po.cwru.edu and razor blades under it....Failing that, check
> the pass transistors." - jangus@skyld.tele.com

What the *&%$#@?>+=!? Hee hee - I actually own stock in several battery companies...

Very good eye, Stephen! The capacitor C4 was deleted:

|
*----SW1---+B1---GND
|
|
C4
|
|
GND
Thanks so much, Stephen.

Jeff NH6IL

857. want info on microwave diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-12 19:11:12 UTC
From: dthomas@bbx.basis.com
Message-ID: <1993Oct12.191112.26887@bbx.basis.com>
Source record: 119273
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

I'm restoring a 1960's vintage military surplus spectrum analyzer, and it turns out that the mixer diode in one of the front ends is fried. At a local surplus store, I was able to score a wide variety of these diodes, but I don't know which would be the best one to use.

Does anyone know the characteristics of these diodes?

1N21B
1N23A
1N78F
1N149
WE9-62

Thanks!
David
--
Their address sums up their attitude: One Microsoft Way.

858. Re: Dual plug

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-13 14:47:29 UTC
From: PJC130@psuvm.psu.edu
Message-ID: <93286.104729PJC130@psuvm.psu.edu>
Source record: 119274
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.digital.misc

In article <29c85l$qkl@crchh941.bnr.ca>, kharker@bnr.ca (Kenneth E. Harker) says:
>
>...so I am wondering if anyone else has tried to build some sort of
>casing to hold the two plugs in their appropriate seperation, and is sturdy
>enough to allow for a lot of plugging and unplugging. Perhaps using heat k
>shrin
>tubing? Nylon wire ties? Cutting open a stereo headphone Y connector and
>gluing
>it back together with cryocanalate (sp?) glue?

I fabricated one using that clear plastic casting resin; it's basically clear epoxy. Be sure to use some sort of strain relief where the cable comes out of the epoxy block.

859. White-jacketed coax

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-13 18:26:26 UTC
From: ppagel@arrl.org
Message-ID: <2443@arrl.org>
Source record: 119275

WANTED

I need either six (6), 6- to 7-foot lengths of white-jacketed RG-8 (or better) coax, or a 50-foot roll of same. Please state particulars and price.

Contact: Paul Pagel at 203-666-1541, 8 AM to 4 PM, Mon-Fri.

860. Vacum tube 307A

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-14 10:29:06 UTC
From: garret@strobe.ATC.Olivetti.Com
Message-ID: <29j9li$msm@olivea.ATC.Olivetti.Com>
Source record: 119277

HELP :

Last week i've found several old vacum tube 307-A
used in military TX. Military name' s VT225.
I need information about this tube.

Thanks, in advance.

Bobba Claudio.

861. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-14 17:18:20 UTC
From: bcoleman@hayes.com
Message-ID: <8105.2cbd519c@hayes.com>
Source record: 119278

In article <CE8DtJ.HJ@hpcvsnz.cv.hp.com>, davidc@lsid.hp.com (David Cook) writes:
>
> I solder the new jack to the end of the cord. Beautiful job. Never done better.
> Then I discover that I forgot to slip the little cover that is supposed to get
> put over the connections onto the cord first. Why can't I remember?

I used to do this a lot with PL-259s. PL-259s are hard as heck to solder,
much less unsolder. Sometimes I'd forget on the first one, then slip the
ring over all the coax. Clever, eh? But, then I'd forget to put the second
one on. ARGH!

After a while, I started checking. I think it just takes experience. Kinda
like being an apprentice carpenter or something. There's dozens of little
things like this that aren't difficult, but hard to remember unless you
have some experience.

--
Bill Coleman, AA4LR ! CIS: 76067,2327 AppleLink: D1958
Principal Software Engineer ! Packet Radio: AA4LR @ W4QO
Hayes Microcomputer Products, Inc. ! UUCP: uunet!hayes!bcoleman
POB 105203 Atlanta, GA 30348 USA ! Internet: bcoleman%hayes@uunet.uu.net
Disclaimer: "My employer doesn't pay me to have opinions."
Quote: "The same light shines on vineyards that makes deserts." -Steve Hackett.

862. Re: aaaaaaaarrrrgggghhhh!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-14 17:30:17 UTC
From: bcoleman@hayes.com
Message-ID: <8106.2cbd5469@hayes.com>
Source record: 119279

In article <CEL9x7.F5o@unccsun.uncc.edu>, tarumph@uncc.edu (Timothy Allen Rumph) writes:
> Problem was, Center conductor is larger on the Bury 8 because of
> the foam dielectric. Several strands folded under the connector and shorted to
> the shell ...

Hmm. This one is also on my personal list for doing connectors. Before soldering, I check to see if the shell is on (if applicable). After soldering, I check with an ohmmeter for proper continuity, as well as for shorts.

Is it just that I'm more patient now that I'm no longer a kid, or have I just been burned too many times...?

--

Oh, here's another ARGH story. In my early days of ham radio, I'd experimented with a large number of indoor antenna solutions. None of them worked very well. Over the years, I must have tried 5 or 6 different kinds. One day, when I was fixing to put up yet another indoor antenna, I noticed that the RG-58 coax I was going to use had a slight bulge about 15 feet down from one end.

I made it up into a cable and tried it with a dummy load. 3:1 SWR. Ouch! Cut off the end with the bulge and tried it. 1:1 SWR.

All along I'd been putting up antennas with the same piece of bum coax. Those 5 or 6 antennas might have actually worked.... ARGH!

(BTW, after I cut out the bum section, the indoor antenna worked great)

--
Bill Coleman, AA4LR ! CIS: 76067,2327 AppleLink: D1958
Principal Software Engineer ! Packet Radio: AA4LR @ W4QO
Hayes Microcomputer Products, Inc. ! UUCP: uunet!hayes!bcoleman
POB 105203 Atlanta, GA 30348 USA ! Internet: bcoleman%hayes@uunet.uu.net
Disclaimer: "My employer doesn't pay me to have opinions."
Quote: "The same light shines on vineyards that makes deserts." -Steve Hackett.

863. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-15 11:03:54 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-750683028@unomaha.edu>
Source record: 119280
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.5 09/18/93 16:49:31
Changes: new mailing lists, .packet rmgroup, and .policy updates

(Note: The following is reprinted with the permission of the author.)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 18 September
1993 to add the mailing lists for the new rec.radio.amateur newsgroups, to
note the rmgroup of rec.radio.amateur.packet, and to officially retire some
(in)famous threads of discussion on rec.radio.amateur.policy.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
arrangement, but one was that the system was not supposed to be used for
commercial purposes. Since one of hams' favorite pastimes is swapping
gear, it was natural for hams to post messages about equipment for sale
to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use
restriction, and after some argument, a group was created specifically
```

for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize

this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, should be removed by September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas,

commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

864. 307-A Tube info

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-15 16:09:37 UTC
From: edw@sequent.com
Message-ID: <1993Oct15.160937.21525@sequent.com>
Source record: 119281

From RCA transmitting Tube (to 4kw plate input) manual
Tech man TT-5 1962

listings jump from 217C to 575A
both 1/2 wave rectifiers

Rcv tube manual also draws a blank

If you can cross it, I look it up
Ed
--
-- I think I've got the hang of it now .... :w :q :wq :wq! ^d X exit ^X^C ~.
^[x X Q :quitbye CtrlAltDel ~~q :~q logout save/quit :!QUIT ^[zz ^[ZZ
ZZZZ ^H ^@ ^L ^[c $q ^≠ ^E ^X ^I ^T ? help helpquit ^D ^d ^C ^c help
^]q exit ?Quit ?q anybackbone!sequent!edw edw@sequent.COM KA9AHQ 28.340

865. PPL Design books/ cookbooks

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-15 19:55:08 UTC
From: wardml@rtsg.mot.com
Message-ID: <29mv6s$7pt@delphinium.rtsg.mot.com>
Source record: 119282

Does anyone out there in the ether know a good source on PPL designs ? I am attempting to construct a frequency generator with an output range of 49 to 75 Mhz for digital R/C radio

If there is a better (easier/cheaper) way let me know, if not give a book or application note sources.

Matthew L Ward, Motorola Personel Digital Cellular.

866. Anybody got an UNBUILT Heathkit 2 meter Handie Talkie Kit???

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-15 22:10:39 UTC
From: jeffl@servprod.inel.gov
Message-ID: <1993Oct15.221039.7055@pmafire.inel.gov>
Source record: 119283

```
Subject line says it all!
Thanks!
please email:

_____________________________________________________________________________
||~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~|~~~~~~~~~~~~~~~~~~~~~~||
||Jeff B. Later WB7TZA "jeffl@pmafire.inel.gov" | "I have become ||
||*"Disclaimer, Disclaimer, Where's My Lawyer!"* | comfortably numb" ||
|| | Pink Floyd ||
| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ |
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
```

867. wanted to buy: 10 ghz transistor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-16 16:52:28 UTC
From: ilr@DIALix.oz.au
Message-ID: <29p8sc$ajs@DIALix.oz.au>
Source record: 119284

I'd like to buy a 10 giga Hz transistor suitable for an LNB for a satellite dish. Its code number is ATF-13135. It doesn't seem to be possible to buy single items of this sort - the Australian distributor will only sell in bulk. Would some kind soul in the US have one for sale. Alternatively, the fax number of a store in the US would be helpful.

Thanks,
Ian Rowe
ilr@dialix.oz.au

868. Re: Vacum tube 307A

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-17 06:55:51 UTC
From: arog@BIX.com
Message-ID: <arog.750840951@BIX.com>
Source record: 119285

I toss this in... that I do NOT find a type 307 in
my 1946 RCA TUBE HANDBOOK. I DO find a type 304TH
and the data sheet is marked as Preliminary.
From that, I'd speculate that this is a 1947 to
1950 vintage tube.

Take a look for numbers in a date format either
in the markings on the glass or scratched on the
plate. That gives an idea as to how old the tube
handbook needs to be for it to be listed.

Are these Amprex tubes, btw.

alan
w6spk
arog@Bix.com

869. INTERMOD

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-18 16:44:00 UTC
From: drobert@vax2.concordia.ca
Message-ID: <18OCT199311442350@vax2.concordia.ca>
Source record: 119286

Hi everyone, This question should concern every soul that ever attempted to operate an H.T. in a mobile using a Mag Mount or other type of external 'gain' antenna in a large city: >>>>> INTERMOD ! The solution seems quite simple ... I noticed that when I'm swamped with intermod, going back to the 'ducky' usually solves the problem at least partially. If one could attenuate the incoming signals from the external antenna on receive only and not affect anything during transmit, you would have the perfect combination for an H.T. in a car ... So what is really needed for so many of us is a "variable rf in-line attenuator" that would be rf-switched-out during transmit.

Any ideas out there?

Thanks & 73 de Denis.


```
-------------------------------------------------------------------------------
|- . , ; * " : ' ` `~ - ,` * ` - + / * |
|: 1+514.769.7829 H . ' . ~~ ' . ; ' : ` " ' ` ,|
| 1+514.848.3454 W " * + ' . ~ Space ... ~ ` |
| " cis:71271,2616 ; . , +. , The Final Frontier. *. "|
| ` Drobert@vax2.Concordia.ca + * . , ; " ' ` ~ , . ~ . ,+|
| ~ Drobert@Conu2 * + ` ~. , : * ; ' " . , + * |
|" * , 71271.2616@Compuserve.com + , * *, . + +|
| , : ve2ilf@ve2fkb.#MTL.PQ.CAN.NA ` " , . ' . : |
| . - , ` +, `- . . * . `- , . ** ` . *+ |
-------------------------------------------------------------------------------
```

870. Re: QRP Mail List

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-10-26 09:21:12 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CFHzBC.K3@news.Hawaii.Edu>
Source record: 119287

In article <1993Oct25.210842.1792@porthos.cc.bellcore.com> karayan@blitzen.cc.bellcore.com (karayannopoulos,george) writes:
>A couple of weeks ago, somebody posted a QRP construction article, where
>he mentioned the existence of a QRP mailing list. I lost that article and
>don't know who it was. Does anybody have any info on that mailing list?
>How do I get on it?
>
>
>_____
>George Karayannopoulos N2OWO
>karayan@cc.bellcore.com Bellcore, Red Bank, NJ
>Disclaimer: The opinions expressed here are mine and not my employer's.

George, to get on the QRP mail list send an email to: QRP-Request@Think.COM
and in the msg just ask to subscribe. The owner will add your email address
to the group; you'll get posts via email. Usually no more than 10 articles
are posted each day, although it's been a bit quiet lately. If you want
to post any questions or comments to the rest of the group, then just
use the email address: QRP@Think.COM

There are some very famous folks who hang out on there: one of the
fastest CW ops in the country, Chuck Adams (70 wpm), is always
building one thing or another. In fact, that is an alternative
homebrew group! It seems everyone is building stuff either from
scratch or from kits (lots of cheap QRP kits available: the Northern
California QRP club is offering a 40M xcvr for about $75). Always
helpful advice is being passed about on there.

72 (the QRP'ers 73),
Jeff NH6IL

871. Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-06 02:20:10 UTC
From: faunt@netcom3.Netcom.COM
Message-ID: <FAUNT.93Nov5182010@netcom3.Netcom.COM>
Source record: 119288

Can someone give me pointers to amplifiers for 2.4gHz?
We're trying to build an ATV repeater here with a 13cm output, and we
need a linear power amp.
Thanks, and 73, doug

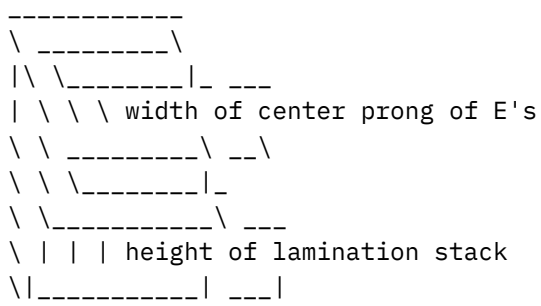
872. Re: Rewinding transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-06 05:01:28 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCG20MG.E8I@netcom.com>
Source record: 119289

Somebody mentioned how many turns per volt, and such. I wound some transformers back in high school days. Saw an article in a model railroad magazine (of all places!) that had an equasion like:

number of turns for 110 volt primary = 800 * square inch area of laminations,

plane of which is the plane of the loop of wire that would form a single turn. Measure the height of the stack of all the E's laminations, and the width of the center prong of an E lamination.



Once you have the number of required turns for the primary, you can easily figure number of turns per volt. pri turns/110 = turns per volt

You have to have enough turns to keep the magnetic flux B low enough so the laminations don't saturate. If I remember my electromechanical devices class right, don't go above 1.5 for B. Don't remember what the units were called though. The idle (magnetic charging? current in the primary is kept lower by the permability of the laminations, than if it was air. But that's only good until you saturate the laminations with magnetism. When that happens, the idle current soars, and you get lots of i r heating, and most likely a smokey firey burnout!

Go to the library or your double E dept and ask someone.

Western culture is like a virus that has infected the entire world :-)

873. Re: Rewinding transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-06 07:19:32 UTC
From: moroney@world.std.com
Message-ID: <CG270L.5xH@world.std.com>
Source record: 119290

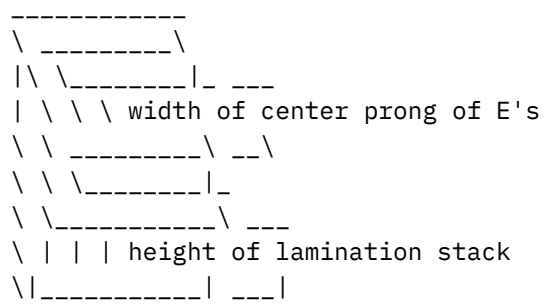
The Radio Amateur's Handbook (at least older versions) give tips on rewinding power transformers. One thing they suggest is _not_ unwinding the primary winding when disassembling the transformer, and count the turns of the secondary to know the proper turns/volt. The primary is almost always on the inside (closest to the core).

-Mike

874. Re: Rewinding transformers CORRECTION

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-06 17:15:02 UTC
From: wa2ise@netcom.com
Message-ID: <wa2iseCG2yL2.30p@netcom.com>
Source record: 119291

In article <wa2iseCG20MG.E8I@netcom.com> wa2ise@netcom.com (I) wrote:
>Somebody mentioned how many turns per volt, and such. I wound some transformers
>back in high school days. Saw an article in a model railroad magazine (of all
>places!) that had an equasion like:
>
>number of turns for 110 volt primary = 800 * square inch area of laminations,
CORRECTION: should be 800 DIVIDE BY lamination area
>
>plane of which is the plane of the loop of wire that would form a single
>turn. Measure the height of the stack of all the E's laminations, and
>the width of the center prong of an E lamination.



>Once you have the number of required turns for the primary, you can easily
>figure number of turns per volt. pri turns/110 = turns per volt
>
>You have to have enough turns to keep the magnetic flux B low enough so
>the laminations don't saturate. If I remember my electromechanical devices
>class right, don't go above 1.5 for B. Don't remember what the units were
>called though. The idle (magnetic charging? current in the primary is kept
>lower by the permability of the laminations, than if it was air. But that's
>only good until you saturate the laminations with magnetism. When that
>happens, the idle current soars, and you get lots of i r heating, and most
>likely a smokey firey burnout!
>
>Go to the library or your double E dept and ask someone.

The bigger the transformar, the less turns it takes for the primary.

875. My home brew..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-06 21:53:58 UTC
From: dfeldman@teal.csn.org
Message-ID: <CG3BHz.1z6@csn.org>
Source record: 119292

Well I just sampled the last of my 3 batches of home brew and they all
came out great (an ale, a bock, and a wheat). I just want to know why
my homebrew radio projects don't improve with age... 73 - wb0gaz

876. Re: My home brew..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-07 17:00:51 UTC
From: andrews@fms.com
Message-ID: <CG4sLG.Fny@fms.com>
Source record: 119293

In article <2bivng$ieo@reznor.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:
>In article <CG3BHz.1z6@csn.org> dfeldman@teal.csn.org (Dave Feldman) writes:
>>Well I just sampled the last of my 3 batches of home brew and they all
>>came out great (an ale, a bock, and a wheat). I just want to know why
>>my homebrew radio projects don't improve with age... 73 - wb0gaz
>
>On a more interesting note, I got my first international contact with the
>$10 Teenage Mutant Ninja Turtle HT, recrystalled for 6M and with an added
>amplification stage on the output for almost half a watt of power. Okay,
>so it was only Canada, but it's still going to be a lot of fun to fill
>out the EQUIPMENT: field on the QSL card.
>--scott

Come on Scott, youv'e got to send me the schematics and mod's to
convert the 'Mutant' walkie to a 6M QRP HT. I've been looking for
this mod forever!

BTW (for DAVE), I've been drinking alot of micro-brewrey beer. It's
all over the place. Of course, you can always send me a bottle and
I'll tell ya how it rates...

--
Tell Me Something I Don't Know, ! HAM = N8OFS
Show Me Something I Can Use, ! ARMY MARS = AAN5HJT
Push The Buttons, ! CB = THE NEON KNIGHT
Connect The God-Damn Dots!!! - Ministry ! HACKER = TH3 N30N KN16Ht

877. Re: My home brew..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-07 18:59:42 UTC
From: dfeldman@teal.csn.org
Message-ID: <CG4y3I.3rM@csn.org>
Source record: 119294

In article <CG4sLG.Fny@fms.com> andrews@fms.com (Andrew Sargent N8OFS) writes:
>In article <2bivng$ieo@reznor.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:
>>In article <CG3BHz.1z6@csn.org> dfeldman@teal.csn.org (Dave Feldman) writes:
>>>Well I just sampled the last of my 3 batches of home brew and they all
>BTW (for DAVE), I've been drinking alot of micro-brewrey beer. It's
>all over the place. Of course, you can always send me a bottle and
>I'll tell ya how it rates...

You really wouldn't want to mess with my latest project -- a 2 meter transverter for a ten-tec argonaut - but I'll let it age 6 months and maybe next spring you can give it a try...

I also would like to see the info on the 6M QRP xcvr... 73 (belch)!

878. Radio Shack WeatherRadio Modification/Schematic

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-08 00:41:23 UTC
From: mrb1@cbnewsh.cb.att.com
Message-ID: <CG5Dx1.HqJ@cbnewsh.cb.att.com>
Source record: 119295
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.scanner,alt.radio.scanner

Hi ---

The library where my wife works went out and bought a Radio Shack WeatherRadio Alert, Model 12-140 to let them know when there will be bad weather, etc. Unfortunately, the person purchasing it did not get the instruction book. Well, they did manage to set it up and get it to work OK but they find the alert noise to be too unnerving (especially in a quiet place like a library). What they really need is for the darn thing to stay muted until there is an alert, and then the speaker unmutes and everyone can hear the message .... not the way it presently works where it squeals away until someone presses the WEATHER button to hear the announcement.

My first thought was to open it up and clip a lead on the little piezoelectric sounder or whatever is in there that makes the alert noise. But upon opening it up carefully, it appears as though the alert noise is summed with the receiver audio before amplification & going out the speaker. And without a schematic, I'm a bit reluctant to do much more. Plus how would you know there was an alert so you could hit the WEATHER button and hear it ?!

So here's the question(s) ---

There's a little switch on the back bottom plate marked "ALERT LOCK" --- will this make the receiver do what I want? What does it do?

-and/or-

Does anyone have a schematic who can tell me what lead to lift to kill the alert tone & make the speaker unmute instead ?

-and/or-

Can someone with a schematic advise where the alert tone audio is generated and summed in, so I can attenuate to a bearable level ?

I would appreciate any and all replies (and anyone suggesting a modification is absolved of all responsibility). E-mail preferred as I am posting to several relevant groups.

Thank you in advance,
Maurice R. Baker, WA3ZXO
ATT&T Bell Labs, Holmdel NJ
reply to mrbaker at attmail.com (or this message)

879. Re: LM2941 Sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-08 21:45:49 UTC
From: zlau@arrl.org
Message-ID: <2602@arrl.org>
Source record: 119229

In rec.radio.amateur.homebrew, bsn@fusion.ph.utexas.edu (Barry Newberger, W5KH) writes:
>Does anyone know of a source of LM2941T voltage regulators? This is
>a variable output voltage device with with a series PNP pass
>transistor.

Try Digi-Key 1-800-DIGI-KEY

They list them in their latest catalog.
They also have Linear Technology's versions of
a low drop out regulators.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

880. LM2941 Sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-08 22:29:57 UTC
From: "Barry Newberger", W5KH <bsn@fusion.ph.utexas.edu>
Message-ID: <2bmh95$d6e@geraldo.cc.utexas.edu>
Source record: 119296

Does anyone know of a source of LM2941T voltage regulators? This is
a variable output voltage device with with a series PNP pass
transistor.
Barry Newberger, W5KH
Inst. for Fusion Studies, UT-Austin
Austin, TX 78712-1060
tel (512) 471-3726
fax (512) 471-6715

881. What do i need to get started?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 00:12:27 UTC
From: todd@goat.geo.arizona.edu
Message-ID: <2bmn9b$nfk@organpipe.uug.arizona.edu>
Source record: 119297

I need to know what sort of equiptment i need in order to broadcast a signal that the FCC will ignore. My campus radio station only broadcasts over cable, and we are sick of it, so we are going to try going pirate, but we need some equiptment first. I've heard that there is a little transmitter that could be used to send a short signal, and you can place more antennaes around in order to get a bigger area within range-I NEED SOME ADVISE!! what do i need to get started?
todd

882. Ferrite Transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 00:29:30 UTC
From: perry@fc.hp.com
Message-ID: <CG7816.DnA@fc.hp.com>
Source record: 119298

It seems we've figured out how to rewind a conventional transformer. Has anyone else tried prying apart one of those ferrite transformers found in switching power supplies? Seems they are one amorphous mass of ferrite, copper, transformer tape, and varnish. Ferrite is an especially brittle substance.

I've tried pulling a few apart and have little ferrite shards all over the shack.

Perry Scott
AA0ET

883. Re: Rewinding transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 03:57:39 UTC
From: markz@ssc.com
Message-ID: <1993Nov09.035739.25351@ssc.com>
Source record: 119303

Michael Moroney (moroney@world.std.com) wrote:
: The Radio Amateur's Handbook (at least older versions) give tips on
: rewinding power transformers.

I've never bothered rewinding one, but another good book is "Practical Transformer Design Handbook" by Lowdon. The old edition was from Sams, but I saw in an ad that the second edition is available from TAB Professional Books.

Mark Zenier markz@ssc.wa.com markz@ssc.com

884. Modification of SR210 (150W SSB HF RTX)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 07:43:09 UTC
From: robertov@flash.ATC.Olivetti.Com
Message-ID: <2bnhmd$noh@olivea.ATC.Olivetti.Com>
Source record: 119299
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.equipment

Hi there,
I have got a SR-210 HF SSB (150W) TRANSCEIVER by SCIENTIFIC RADIO SYSTEM INC.
367 Orchard Street
Rocherster, New York

This radio is from 1975.
It has 10 channels that can be placed into HF frequencies but
unfortunatly everything is designed for a fixed configuration.
For example the there are 10 output network that are fixed and
parts (capacitor) should be changed when you wish to change
frequency (changing the crystal) the same is more or less true
for the input mixer network . A multisection rotary switch
with 10 position select all the 10 different network.

Question:

Does anybody know the better way to modify this radio and make it
working by using a VFO instead of only using the 10 available channels
that are standard with the ten xtal that are into it.

I have figured out some ways but I am not sure.
If somebody already did some modification on this equipment I am asking
for hints.
I want to move from each channal 100KHZ so that the input
and output network should not suffer too much about the modification.

Thanks in advance to anybody that will help me.

73

If possible please reply at this addr. robertov@hqlab.ico.olivetti.com

885. Re: Looking for dials ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 10:27:10 UTC
From: zlau@arrl.org
Message-ID: <2604@arrl.org>
Source record: 119230

In rec.radio.amateur.homebrew, drew@trl.oz.au (D.Diamond) writes:
>
>Second-hand at hamfests is about all you can hope for in the way of
>a really good unit- perhaps a nice Eddystone or Millen. Ocean State
>Electronics in Rohde Island USA (can supply address if you wish) still
>supply a good copy of the original Jackson Bros. 6:1 planetary
>drive. You can tandem two of them to get your 36:1 reduction with pretty
>good smoothness and acceptable backlash, provided you insert a good
>flexible coupler between drive and capacitor shaft.
>
A cheap way to eliminate backlash is to house your VFO in box made
out of unetched double sided circuit board stock. You solder the
walls together last, after you have made sure everything lines up
properly with a minimum of binding. You then stick this box in
another one so it looks nice, and pick up some more shielding. If
you are buying capacitors at a hamfest, you might look for one with
a smooth but not loose feel. I've noticed differences among "factory
sealed" units of the same type.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

886. Re: My home brew..

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 15:01:33 UTC
From: datwyler@moons.sim.es.com
Message-ID: <2bobcd$3fh@moons.sim.es.com>
Source record: 119300

Mutant Ninja 6m. Sounds fun. Pass the info please.

TNX 73

--
Douglas L. Datwyler, WR7O
Evans & Sutherland Computer Corp.
preferred e-mail: datwyler@moons.sim.es.com

887. Re: Ferrite Transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 16:20:50 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov09.162050.58048@yuma.ACNS.ColoState.EDU>
Source record: 119301

In article <CG7816.DnA@fc.hp.com> perry@fc.hp.com (Perry Scott) writes:
>Has anyone else tried prying apart one of those ferrite transformers
>found in switching power supplies? Seems they are one amorphous mass
>of ferrite, copper, transformer tape, and varnish. Ferrite is an
>especially brittle substance.
>I've tried pulling a few apart and have little ferrite shards all over
>the shack.
>Perry Scott
>AA0ET

The ferrites I've been able to get out of switching supplies didn't work too well at RF (I was on 6m, they may be OK at MF or HF). They were very lossy.

I soaked the xfmr in a solvent to dissolve the tape adhesive and varnish. Then (wearing rubber gloves) I peeled off what I could and cut the rest with some big wire cutters, finally ending up with a core that was almost useless at the frequencies I was on. I've since broken down and bought an experimenter's kit from Amidon.

I, too, have ferrite shards in the corners of the shack. Wear goggles!
Galen, KF0YJ

888. Re: Ferrite Transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 16:35:26 UTC
From: gwk@cbnews.cb.att.com
Message-ID: <CG8Gr9.nE@cbnews.cb.att.com>
Source record: 119302

From article <CG7816.DnA@fc.hp.com>, by perry@fc.hp.com (Perry Scott):
> It seems we've figured out how to rewind a conventional transformer.
> Has anyone else tried prying apart one of those ferrite transformers
> found in switching power supplies? Seems they are one amorphous mass
> of ferrite, copper, transformer tape, and varnish. Ferrite is an
> especially brittle substance.
>
> I've tried pulling a few apart and have little ferrite shards all over
> the shack.
>
> Perry Scott
> AA0ET

I've gotten a couple apart intact by baking in the oven until the
varnish/glue got soft. About 60% success rate.

gwk
--
* I don't speak for AT&T. * George Kinder gwk@cblpe.ATT.COM *
* AT&T doesn't speak for me. * AT&T Bell Laboratories (I think) *
* We both like it this way. * Columbus, Ohio 614-860-2238 *

889. remote switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 20:03:40 UTC
From: sbass@hpfcso.FC.HP.COM
Message-ID: <150560002@hpfcso.FC.HP.COM>
Source record: 119308

As part of a project of mine, I would like to construct a remote control switch that operates on principles used by garage door openers and car alarm systems. I was hoping that some of you might have personal experience in radio circuitry that would be willing to give me a few pointers, or refer me to some practical technical text on the subject. I need to make this thing from scratch for use as a part of a demonstration. If you can help me, please send me some e-mail. Thanks in advance.

Steve Bass
sbass@fc.hp.com

890. PCB for Hamcomm/JVFAX interface available?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-09 21:19:01 UTC
From: "F. Kevin Feeney" <fkf1@cornell.edu>
Message-ID: <2bp1g5INNehc@newsstand.cit.cornell.edu>
Source record: 119304

Hi,

A bunch of hams in the local area have gotten excited about the hamcomm and jvfax programs to do cw/rtty and fax/sstv. Since they use the same simple op-amp interface, it's very handy and they work surprisingly well.

Since there is so much interest, it would help a lot if there was a pc board for it to help the first time builders. I"m sure I could design one, but I don't have the free time right now. Does anyone know if□□ there is one available from some source like FAR?

TIA

Kevin, WB2EMS

891. Re: Looking for dials ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 00:07:26 UTC
From: drew@trl.oz.au
Message-ID: <drew.79.0@trl.oz.au>
Source record: 119305

In article <CG0nx0.sK@abacus.demon.co.uk> dmb@abacus.demon.co.uk (David Byrne) writes:
>From: dmb@abacus.demon.co.uk (David Byrne)
>Subject: Looking for dials ...
>Date: Fri, 5 Nov 1993 11:29:23 +0000
>
>Any homebrewers (esp. in the UK) know of a source for dials ? I'm building
>a SW superhet, and looking for a decent dial/reduction drive to use for the
>vfo, ideally something with about 36:1 reduction. I remember seeing a
>reduction drive with selectable 6:1 and 36:1 ratios years ago, but can't
>seem to get anything better than 10:1 these days. I could use a second
>variable cap. in parallel with the primary cap. for electronic bandspread
>I suppose, but I'd prefer to stay mechanical because I think calibrating
>the freq. display dial will be easier.
>
>Any help appreciated,
>
>-David.
>--
>David Byrne, Abacus Software, London, UK Tel: +44 71 930 4884
>Email: dmb@abacus.demon.co.uk Fax: +44 71 839 7445
>Here's a koan: If you have ice-cream I will give you some. If you have none,
> I will take it away from you. (it's an ice-cream koan).

Hello David. Similar problem here in Australia (any manufacturers reading this- great opportunity for a highly desirable item here- believe Ten Tec dials are rather good- how about it?).

Second-hand at hamfests is about all you can hope for in the way of a really good unit- perhaps a nice Eddystone or Millen. Ocean State Electronics in Rohde Island USA (can supply address if you wish) still supply a good copy of the original Jackson Bros. 6:1 planetary drive. You can tandem two of them to get your 36:1 reduction with pretty good smoothness and acceptable backlash, provided you insert a good flexible coupler between drive and capacitor shaft.

73 Drew, VK3XU.

892. Re: Ferrite Transformers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 01:01:59 UTC
From: perry@fc.hp.com
Message-ID: <CG947B.IGq@fc.hp.com>
Source record: 119306

Galen Watts (galen@picea.CFNR.ColoState.EDU) wrote:

: The ferrites I've been able to get out of switching supplies didn't work
: too well at RF (I was on 6m, they may be OK at MF or HF). They were
: very lossy.

Switcher ferrite is optimized for use around 100 KHz for well, switching power supplies. I would expect them to be quite lossy at 50 MHz. I'm playing with designing my own switcher and intend to stay near DC.

: I, too, have ferrite shards in the corners of the shack. Wear goggles!

Safety glasses are always a good idea for homebrewers.

Perry

893. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 04:02:33 UTC
From: Ed Ellers <EDELLERS@delphi.com>
Message-ID: <931109.82953.EDELLERS@delphi.com>
Source record: 119307

I've got a better idea, if you have access to a satellite dish...find a color TV whose circuitry is such that you can measure its color oscillator frequency without too much trouble. Hook this up to the satellite receiver and tune in NBC (Satcom F1R channel 8) or one of the ABC channels on Telstar 302 (they're encrypted, but still have valid sync). These networks (as well as CBS) use atomic standards to drive their master sync generators -- NBC is actually using a cesium standard, I think CBS and ABC use rubidium -- so that their multiple studio sites can be kept in sync without too much tweaking. With this hookup in place set your counter to read 3.5795454... MHz (the 54s go on infinitely).

Interestingly enough, since WWV's master clock site in Boulder doesn't have a clear line of sight to the transmitters in Fort Collins, they have an arrangement
with one of the Denver TV stations; they microwave a clock signal over to that station (I've forgotten which one) and have gear there to phase-lock the color subcarrier to it. At the WWV Fort Collins site they then take the signal off air and phase-lock all their frequency standards to the burst; audio gets there over a leased phone line from Boulder.

894. CW Crystals / W0LPS

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 07:35:41 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Nov10.073541.14321@cyphyn.radnet.com>
Source record: 119312

I'm not sure if this got here or not, cause the News/Use net imploded somewhere...and all is GONE! (Being worked on)

Altho it took 4 months+ , I got the crystals and already air-tested the #26 tube, triode osc/transmitter (1/4 watt) ... and even got to hear it at a good distance!

So, anyone looking for FT-243 xtals (or still waiting for em), CW Crystals is still there...just back-logged with work.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

895. Re: Looking for dials ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 10:28:29 UTC
From: dstock@hpqmoca.sqf.hp.com
Message-ID: <CG9uFI.LMz@hpqmoea.sqf.hp.com>
Source record: 119309

David Byrne (dmb@abacus.demon.co.uk) wrote:

: Any homebrewers (esp. in the UK) know of a source for dials ? I'm building
: a SW superhet, and looking for a decent dial/reduction drive to use for the
: vfo, ideally something with about 36:1 reduction. I remember seeing a
: reduction drive with selectable 6:1 and 36:1 ratios years ago, but can't
: seem to get anything better than 10:1 these days. I could use a second
: variable cap. in parallel with the primary cap. for electronic bandspread
: I suppose, but I'd prefer to stay mechanical because I think calibrating
: the freq. display dial will be easier.

: Any help appreciated,

The 6:1/36:1 things were done by jackson, I still have a couple of
them around somewhere, but I never liked the feel. Ball drive reducers
are a bit too prone to wear for the main tuning of a receiver used to
regularly roam the bands. The eddystone receivers and the "898" dial all
have skinny little plain bushes for the tuning knob shaft and are prone
to wear, it is unlikely that you'll find one in the junk at a rally that
you would really want to use.

FIND A JUNK BC221 frequency meter. All ball race, no backlash, no
endfloat, the combined gearbox and capacitor in one of these is built to
survive the end of the universe. 50 revs from end to end, no end stops
it just goes round nd round. About 11-176 pF (would you believe I
happened to measure one last night, as I'm currently writing about just
this subject for a publishing venture I'm involved in!)
This is not flywheel tuning, but is very very smooth. A precision
instrument.

You can easily prune out vanes from the rotor to reduce the
capacitance swing, (putting them back is not so easy :-)

With one of these, you'll have no need for any increased bandspread.

Expect to pay #10 to #20 (I once got one for #5!) The dial, gearbox,
capacitor comes out as one unit, you just need 3 mounting screw holes in
your panel, + a hole for the flange that takes the tuning knob, and a
window for the turns counting drum to show through. You glue your own
scale over this drum. Look for one in the photos of the last re of the
G2DAF TRANSMITTER (MK3?) in the RSGB handbook.

No one seems to want antique calibrated oscillator type freq meters now
counters are common.

Hope this helps

Cheers
David GM4ZNX

896. Opto-isolator keying

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 13:16:27 UTC
From: jennings@eng115.rochny.USpra.abb.COM
Message-ID: <9311101316.AA02616@nms1.abb.com>
Source record: 119311

Hi,

My friend is building a keyer circuit using the Curtis Keyer chiip.
He is trying to reduce the size and power cnsumption so he
would like to use an opto isolator instead of a relay
or transistor type circit for the output stage. His rig is a
Kenwood TS-140S. He is interested in circuits which use
opto-isolators to key transmitters and use little current.
Any suggestions or references?

Thanks and 73

Tom, kv2x

--

|
Thomas J. Jennings | Tel: (716) 273 7071
Development Engineer | Fax: (716) 273 7262
|
ABB Process Automation |
Post Office Box 22685 |
Rochester, New York 14692-2685 |
|

Internet: jennings@jennings.rochny.uspra.abb.com
---

897. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 16:21:04 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2br4dg$gei@hpscit.sc.hp.com>
Source record: 119310

In article <931109.82953.EDELLERS@delphi.com>,
Ed Ellers <EDELLERS@delphi.com> wrote:
>encrypted, but still have valid sync). These networks (as well as CBS) use
>atomic standards to drive their master sync generators --
>NBC is actually using
>a cesium standard, I think CBS and ABC use rubidium -- so that their multiple
>studio sites can be kept in sync without too much tweaking. With this hookup
>in place set your counter to read 3.5795454... MHz (the 54s go on infinitely).

As far as I know from talking to people in both the TV and atomic clock
industries, the networks no longer use atomic clocks, because the widespread
use of digital time base correctors has made them unnecessary.
>
>Interestingly enough, since WWV's master clock site in Boulder doesn't have a
>clear line of sight to the transmitters in Fort Collins, they have an
>arrangement
>with one of the Denver TV stations; they microwave a clock signal over to that
>station (I've forgotten which one) and have gear there to phase-lock the color
>subcarrier to it. At the WWV Fort Collins site they then take the signal off
>air and phase-lock all their frequency standards to the burst; audio gets
>there over a leased phone line from Boulder.

I don't have specific knowledge of the case you site, but the normal
way this is done is different from what you described. Normally,
nothing special is done at the TV station. Rather, the two sites who
want to sychronize measure the frequency of the TV station at the same
time and use the ratio of the two measurements to calibrate the slave
site to the master site. This is what the Naval Observatory does in
Washington DC with channel 5 when they want to calibrate a remote site
to the clocks at the Observatory. At HP, we use channel 7 in San Francisco
to transfer frequency from our Santa Clara facility to others in the
bay area. That doesn't help Joe Ham though because channel 7 doesn't
have an atomic clock. In fact, the technical types at channel 7 that
I have talked to were unaware we were even using their signal.

Rick Karlquist N6RK
HP Santa Clara Division (where atomic clocks are made)
rkarlqu@scd.hp.com

898. What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 18:51:22 UTC
From: dbraun@iil.intel.com
Message-ID: <2brd7a$q4a@ilx049.intel.com>
Source record: 119315
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

I was at this surplus electronic junk place, and they
had a big spool of "RG-22" coax cable. I couldn't
tell much about it, except that it seemed to resemble
RG-8. None of my references (ARRL Handbook, Antenna Book, etc.)
mention this type of cable. Anyone ever heard of it?

Thanx in advance,

Doug Braun Intel Israel, Ltd. M/S: IDC1-41
4X/N1OWU Tel: 011-972-4-655069 dbraun@inside.intel.com

899. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 19:19:39 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov10.191939.24724@ke4zv.atl.ga.us>
Source record: 119313

In article <931109.82953.EDELLERS@delphi.com> Ed Ellers <EDELLERS@delphi.com> writes:
>I've got a better idea, if you have access to a satellite dish...find a color
>TV whose circuitry is such that you can measure its color oscillator frequency
>without too much trouble. Hook this up to the satellite receiver and tune in
>NBC (Satcom F1R channel 8) or one of the ABC channels on Telstar 302 (they're
>encrypted, but still have valid sync). These networks (as well as CBS) use
>atomic standards to drive their master sync generators -- NBC is actually using
>a cesium standard, I think CBS and ABC use rubidium -- so that their multiple
>studio sites can be kept in sync without too much tweaking. With this hookup
>in place set your counter to read 3.5795454... MHz (the 54s go on infinitely).

Unfortunately for this scheme, it doesn't work that way anymore, not
that it ever really did. Master sync generators and genlocked slaves
are an artifact of the past. Now, everywhere a signal enters a facility
it passes through a frame synchronizer. This bit of digital magic has
replaced the proc amp as well as removing the need to ever genlock
sources together or attempt to keep stable time references.

A framesync A/D converts incoming video and clocks it into memory
using a clock locked to the burst of the incoming signal. The signal
is then clocked out of memory using a clock slaved to the local sync
generator, usually an ordinary crystal oscillator, and D/A converted.
Fields are skipped occasionally to prevent memory overruns in the
circular memory buffer. Any time or frequency coherence with the
original source material is lost.

Oddly enough, it was the development of satellite relay that prompted
the development of the framesync. The delay through the satellite is
such that normal genlock range was exceeded, and the doppler shift
of even GEO sats caused intractable phase coherence problems. When
we uplink to the satellite and watch our signal coming back on the
downlink, we see the phase vector swing madly first in one direction
then in the other as the satellite does it's little figure 8 in the
sky.

The networks have retired their atomic clocks, the reference you get
for satellite TV signals is the crystal oscillator at the particular
uplink site. Note that the networks now often "live switch" the feed
from uplink site to uplink site between programs. So one program may
come out of NY, the next out of Charlotte, the next Atlanta, and the
next out of LA, with individual segment feeds coming from mobile uplink
trucks during breaking events. All of those using a different crystal
timing reference. If your TV is old, you may see a sync roll or noise
burst at the switch between programs, but modern TVs take it in stride.
Everybody is supposed to keep burst within +/- 10 Hz of it's nominal value,

and they usually do, but it's certainly no longer atomic clock traceable.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

900. Electronic Keyer Kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 21:50:19 UTC
From: wps@ElSegundoCA.NCR.COM
Message-ID: <4765@tdbunews.teradata.COM>
Source record: 119314
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew

Does any one have any pointers for an electronic keyer kits? I guess I might build one vs. buying a completed keyer. There should be a big price difference.

Bill


```
+-----------------------------------------------------+
| |
| Bill Starkgraf wps@ElSegundoCA.ncr.com |
| Customer Support Engineer (310) 524-5754 |
| National Support Center (800) 222-6245 x5754 |
| |
| NCR Corporation KD6UQB |
| 100 N. Sepulveda Blvd. Simi Settlers ARC |
| El Segundo, CA 90245 Simi Valley, California |
| |
+-----------------------------------------------------+
```

901. Re: remote switch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-10 23:42:31 UTC
From: brian@amdcl2.amd.com
Message-ID: <CGAv6v.11r@amdcl2>
Source record: 119317
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.amateur.equipment

Steve Bass writes:

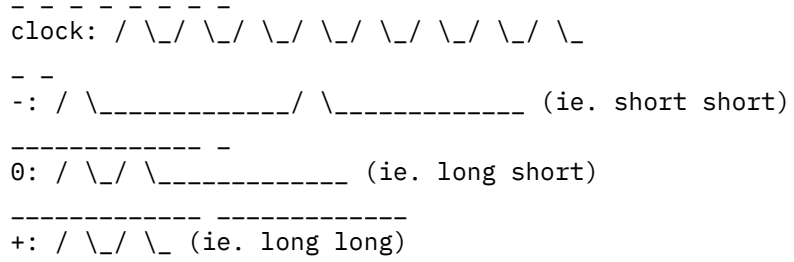
> As part of a project of mine, I would like to construct a remote
> control switch that operates on principles used by garage door
> openers and car alarm systems.
>
> Steve Bass
> sbass@fc.hp.com

I just finished playing around with one of these and wanted to post what I'd learned to the net but wasn't sure whether anyone would be interested. Obviously, someone is, so here's the garage door info file:

I recently reverse-engineered the transmitter half of a simple garage door opener. My intent was to increase it's range beyond the current 30 foot maximum. I didn't figure out how to crank the power, but I did learn a lot about how they work. I haven't studied the receiver box yet.

Clock:
The circuit derives a simple 50% duty cycle clock from an RC based oscillator. Most of this logic is contained in the single IC. There are two external resistors and one external capacitor used to set the clock frequency. (Note that this clock is a digital clock and has nothing to do with producing the actual RF.)
This clock has a period of approximately 1.15 milliseconds.

Coding:
The code for this unit is a 9 digit base 3 number. It is set via a 9 place dip switch with 3 positions per switch. The 3 positions are labeled minus zero and plus. The switch labeled 1 is sent first. Here are the waveforms associated with each "digit":



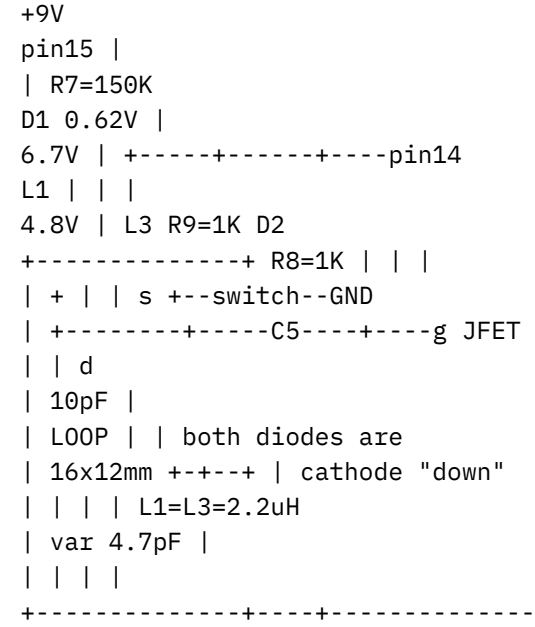
The IC reads the switch positions and produces a digital signal which is a sequence of nine of the above waveforms (one for each

switch) strung end to end followed by a long period of zero output.
The key is sent repeatedly while the button is held down.

Keying:
There are only two connections between the IC and the RF oscillator.
One of them carries the above "key" waveform and is apparently used to
power the oscillator! I don't really understand the function of the
second connection.

Oscillator:
The RF oscillator is composed of a single n-channel JFET transistor
(type 2n5486) and several passive components. It appears that the
oscillator tank circuit and the antenna have been combined into a
single unit made of a loop on the circuit board with an adjustable
capacitor across it. By adjusting the capacitor, I could change the
oscillation frequency from 275MHz (max cap) to 335MHz (min cap). Note
that most common remote units operate at 390MHz, so this obviously
isn't one of them!

At the risk of producing a monster, here is an ASCII drawing of the
RF oscillator circuit:



The voltages shown are during oscillation. I had some real
difficulty measuring the frequency of this circuit because there isn't
any point on the circuit that is a pure RF with no AC component due to
the switching waveform. I finally just coupled to probe into the loop
with a small loop on the oscilloscope probe. Pin 15 is the switching
waveform. When it's high, the circuit oscillates. I don't know the
function of pin 14. The switch is the button that activates the whole
circuit.

Anyone with ideas for how to increase the power of this unit?

The receiver is in a weather sealed box and I haven't gotten brave enough to open it yet.

Brian McMinn N5PSS brian.mcminn@amd.com

902. Re: Opto-isolator keying

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 00:51:18 UTC
From: walker@opus.hpl.hp.com
Message-ID: <40010004@opus.hpl.hp.com>
Source record: 119316

In rec.radio.amateur.homebrew, jennings@eng115.rochny.USpra.abb.COM (Tom_Jennings) writes:

> My friend is building a keyer circuit using the Curtis Keyer chiip.
> He is trying to reduce the size and power cnsumption so he
> would like to use an opto isolator instead of a relay
> or transistor type circit for the output stage. His rig is a
> Kenwood TS-140S. He is interested in circuits which use
> opto-isolators to key transmitters and use little current.
> Any suggestions or references?

Use a power fet (like a VN10KM). Zero dissipation on the gate side, and you
can easily find parts to handle 100V and 1A. Should be fairly bomb-proof.
If you use an enhancement fet, you can switch directly off the TTL level
output.

--
Rick

903. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 05:56:08 UTC
From: steve@matt.ksu.ksu.edu
Message-ID: <2bsk5oINNc0d@matt.ksu.ksu.edu>
Source record: 119218

Ed Ellers <EDELLERS@delphi.com> writes:

>Interestingly enough, since WWV's master clock site in Boulder doesn't have a
>clear line of sight to the transmitters in Fort Collins, they have an
>arrangement
>with one of the Denver TV stations; they microwave a clock signal over to that
>station (I've forgotten which one) and have gear there to phase-lock the color
>subcarrier to it. At the WWV Fort Collins site they then take the signal off
>air and phase-lock all their frequency standards to the burst; audio gets
>there over a leased phone line from Boulder.

When I went to NIST this summer and took their self-guided tour, I also
picked up some time-reference documentation. It claims they use a
microwave link to the transmitters in Fort Collins. It also says the
WWV/WWVB clocks are compensated for the path delay.

I would really doubt a goverment agency would use a commercial TV
station for a time reference.

-Steve Schallehn KB0AGD
Kansas State University

904. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 08:39:42 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov11.083942.27876@ke4zv.atl.ga.us>
Source record: 119219

In article <2brk68$qh5@reznor.larc.nasa.gov> kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:
>
>It used to be that you could depend on your local TV station for highly
>accurate timing reference, but not any longer. I don't know about the actual
>network feeds, though. Gary, do you have a clue?

Yeah, I answered this before. The networks don't use atomic clocks anymore either. The frame synchronizer has made the requirement for high stability references obsolete, and the change to satellite distribution from the old microwave long haul nets has added the problem of satellite induced doppler. A few stations have an atomic reference for their transmitted carrier frequency, WSB in Atlanta does, but they'll likely replace it with a crystal the next time it breaks. These old frequency standards are getting to be a pain to keep running. The FCC only requires that TV broadcasters maintain a frequency tolerance of +/- 1,000 Hz for their carriers, and +/- 10 Hz for the color subcarrier. That's easily done with just a crystal oscillator.

Inside the plant we keep everything locked together for ease of editing and switching, but we really don't care about the absolute frequency as long as it's the same throughout the plant. The frame syncs fix out of house signals so they match our internal reference, and the viewer's TV sets don't care anyway.

Sorry guys, we aren't NBS, or NIST as they call themselves now. We're just trying to make a buck as cheaply as we can. We use Hi-8 and even VHS internally nowadays. The days when broadcast was profitable enough to afford the best are gone forever.

Gary
--
Gary Coffman KE4ZV |"If 10% is good enough | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | for Jesus, it's good | uunet!rsiatl!ke4zv!gary
534 Shannon Way | enough for Uncle Sam."| emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Ray Stevens |

905. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 12:47:42 UTC
From: microtv@umich.edu
Message-ID: <microtv-111193074429@dowmac165.engin.umich.edu>
Source record: 119220

According to my 'Reference Data for Engineers', 7th edition, RG-22 is a twin
conductor, polyethylene dielectric cable. 16 pF/ft capacitance, 1000 Vrms rating, Impedance of 95 ohms.

906. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 16:29:47 UTC
From: tomb@lsid.hp.com
Message-ID: <CGC5tn.91x@hpcvsnz.cv.hp.com>
Source record: 119221
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

Doug Braun (dbraun@iil.intel.com) wrote:

: I was at this surplus electronic junk place, and they
: had a big spool of "RG-22" coax cable. I couldn't
: tell much about it, except that it seemed to resemble
: RG-8. None of my references (ARRL Handbook, Antenna Book, etc.)
: mention this type of cable. Anyone ever heard of it?

RG-22/U: twin conductor (you didn't notice that??) double
braid shielding. 95 ohms (between the balanced conductors).
You might be able to use it as coax by connecting the two
conductors together, but why bother...

907. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 17:01:51 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov11.170151.42630@yuma.ACNS.ColoState.EDU>
Source record: 119222
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

In article <2brd7a$q4a@ilx049.intel.com> dbraun@iil.intel.com (Doug Braun) writes:
>I was at this surplus electronic junk place, and they
>had a big spool of "RG-22" coax cable. I couldn't
>tell much about it, except that it seemed to resemble
>RG-8. None of my references (ARRL Handbook, Antenna Book, etc.)
>mention this type of cable. Anyone ever heard of it?
>Thanx in advance,
>Doug Braun Intel Israel, Ltd. M/S: IDC1-41
>4X/N1OWU Tel: 011-972-4-655069 dbraun@inside.intel.com

I can't find it in either the Belden catalog or the Reference Data for
Engineers.

Who makes it? Any other numbers, etc on the jacket?
galen,KF0YJ

908. homebrew help

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 18:02:59 UTC
From: majec@cactus.org
Message-ID: <1993Nov11.180259.27183@cactus.org>
Source record: 119224
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

I am thinking about a project to put in a swr protection circuit in my QRP radio. It is a TEN-TEC pm2. A direct conversion 1 watt vfo/crystal transceiver.
I am using a 10 ohm resistor in the dc line to the collector on the final, and when I have it tuned for the antenna I take the resistor out and close up the line. Crude I will admit. This is only a temporary fix and will not be good for portable operation such as camping etc. So....

Any suggestions for a protection circuit would be appreciated as i am very new to the sport of ham homebrew and need some elmering on most things.

Thanks

Ed Guinn
KB5RUF/AG
majec@cactus.org

909. Re: LM2941 Sources

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 21:49:48 UTC
From: dnewkirk@arrl.org
Message-ID: <2598@arrl.org>
Source record: 119225

In rec.radio.amateur.homebrew, bsn@fusion.ph.utexas.edu (Barry Newberger, W5KH) writes:
>Does anyone know of a source of LM2941T voltage regulators? This is
>a variable output voltage device with with a series PNP pass
>transistor.

Digi-Key now carries them.

Regards/WJ1Z

David Newkirk, WJ1Z | voice: 203-666-1541 X280
American Radio Relay League | fax: 203-665-7531
225 Main St, Newington CT 06111 USA | net: dnewkirk@arrl.org

910. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 22:45:00 UTC
From: tskloss@zeus.tamu.edu
Message-ID: <11NOV199316453493@zeus.tamu.edu>
Source record: 119227
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

The "RG-22" may be some specialty coax made by a defunct wire manufacturer. RG-8 type or generically "1/2" inch coax comes in many varieties. There is RG-214, RG-216, belden 9913, etc. all of which are basically RG-8 with some special addition such as larger diameter center conductor (which requires a larger connector), air dielectric, silver plated conductors, double shielding, more flexible shielding and so on. Some of these special ones have thier own RG number because they are commonly used in military type, high reliability applications. Our instruments use a special type with silver plated conductors, both center and shield, that resemble RG-8 and use normal RG-8 connectors although the cable is not RG-8.

Anyhow, my advice is strip an inch off one end and try to get a handle on what it is composed of. Is the center conductor solid or stranded? What is the OD of the center conductor? Are any of the conductors plated with other metals? What is the dielectric made of? Jot all of the basic parameters down and look through the belden master catalog and see if you can find something close. If you do, then use that cable data to calculate what the cable can do for you.

Chances are it may have been made for a particular purpose, either to maximize freq/power transfer or maybe protect from the elements and heat.

good luck!

-tim

/--\
* *(* (**)(* *)* *)*	Tim Skloss KC5DNA
* * \/ \/ * *	Texas A&M University, Dept. of Chemistry
* /=========\ *	College Station, TX 77843-3255
*	OXFORD		LABORATORY FOR MAGNETIC RESONANCE
	mags.	*	AND MOLECULAR SCIENCE
*	RULE!		voice: (409) 845-4459
|_________|	fax: (409) 845-4719
|| ||	Internet: TSKLOSS@venus.tamu.edu
== ==	My opinions do not reflect those of TAMU!
\--/
"The brain is much like a computer;
therefore dumb people do not exist, just people running DOS!"
PowerPC - The ULTIMATE personal computing machine.

911. SWR meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-11 23:53:16 UTC
From: cravitma@cps.msu.edu
Message-ID: <2buj9c$qcn@msuinfo.cl.msu.edu>
Source record: 119226

If anyone has any (relatively non-complicated to build) plans for a VHF SWR meter that they could mail or Fax me, I would really appreciate it if you could drop me a note (I use my dad's Fax machine at work, so I don't want 500 people Faxing me stuff). So, please drop me a note to cravitma@cps.msu.edu if you have such a thing.

Thanks and 73,

/Matthew

--
Matthew Cravit | "So I sent him to ask of the
Michigan State University | owl, if he's there, how to
East Lansing, MI 48825 | loosen a jar from the nose
E-Mail: cravitma@cps.msu.edu | of a bear..."

912. Re: homebrew help

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 02:13:44 UTC
From: walker@opus.hpl.hp.com
Message-ID: <40010005@opus.hpl.hp.com>
Source record: 119223

In rec.radio.amateur.homebrew, majec@cactus.org (Majec Systems) writes:

Ed,

> I am thinking about a project to put in a swr protection circuit in my
> QRP radio. It is a TEN-TEC pm2. A direct conversion 1 watt vfo/crystal
> transceiver.

The most common technique for low power levels is to put a zener diode
across the final amplifier tank. The idea is for this to conduct if the
SWR causes the final pk/pk voltage to get too high.

You'll want a zener rated to handle the full current of the output stage,
and with a voltage somewhat below the transistor breakdown voltage.
The PA output filter values will need to be modified to use the zener
capacitance as part of the network.

For higher power, you'll need a fancier circuit to sense the mismatch and
reduce the input drive level...

--
Rick Walker, wb6gvi

913. Re: homebrew help

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 12:46:23 UTC
From: sbrown@charon.dseg.ti.com
Message-ID: <SBROWN.93Nov12064623@charon.dseg.ti.com>
Source record: 119232

Rick Walker writes, in response to a message from someone at
majec@cactus.org (Majec Systems):

> The most common technique for low power levels is to put a zener diode
> across the final amplifier tank. The idea is for this to conduct if the
> SWR causes the final pk/pk voltage to get too high.
>
> You'll want a zener rated to handle the full current of the output stage,
> and with a voltage somewhat below the transistor breakdown voltage.
> The PA output filter values will need to be modified to use the zener
> capacitance as part of the network.
>
> For higher power, you'll need a fancier circuit to sense the mismatch and
> reduce the input drive level...
>
> Rick Walker, wb6gvi

Doesn't the zener capacitance change with loading/SWR? I haven't done
any analysis of the situation, but it sure seems that it would. This
would have the effect of changing the tuning of the final.

Just my 2c worth.

****
Steve Brown, WD5HCY	
sbrown@charon.dseg.ti.com	Simplicate
wd5hcy@wd5hcy.ampr.org	and add
[44.28.0.61]	lightness.
wd5hcy@kf5mg.#dfw.tx.usa.na	
****

914. Re: Electronic Keyer Kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 12:53:42 UTC
From: dick@kanga.demon.co.uk
Message-ID: <753108822snz@kanga.demon.co.uk>
Source record: 119228

In article <4765@tdbunews.teradata.COM> wps@ElSegundoCA.NCR.COM writes:

>Does any one have any pointers for an electronic keyer kits? I guess I might
> build
>one vs. buying a completed keyer. There should be a big price difference.
>
>Bill
>
Try Kanga US - e-mail N8ET at kelsey@csn.org

73
--

Dick Pascoe G0BPS dick@kanga.demon.co.uk
"Walk softly but carry a big stick" - A qrp'er packet: g0bps@gb7rms

915. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 17:37:27 UTC
From: kharker@bnr.ca
Message-ID: <2c0hkn$e7c@crchh941.bnr.ca>
Source record: 119231

In article <2c0bbk$6qp@reznor.larc.nasa.gov>, kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:
|> In article <microtv-111193074429@dowmac165.engin.umich.edu> microtv@umich.edu (Jerry McCarty) writes:
|> >According to my 'Reference Data for Engineers', 7th edition, RG-22 is a
|> >twin
|> >conductor, polyethylene dielectric cable. 16 pF/ft capacitance, 1000 Vrms
|> >rating, Impedance of 95 ohms.
|>
|> On a similar note, where can I get some RG-146/U?

I was looking for this a while back, and I wasn't able to find anyone in North America willing to sell me fewer than 350m of the stuff. I finally gave up.

--
Kenneth E. Harker BNR "Any opinions expressed
kharker@bnr.ca Richardson, Texas, USA are solely mine and do
N1PVB (214) 684-5115 not represent BNR"

916. Vector Impedance Meter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 18:07:35 UTC
From: dbraun@iil.intel.com
Message-ID: <2c0jd7$s0n@ilx049.intel.com>
Source record: 119233
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

At a surplus place (the same one that had the (useless) RG-22 cable),
I bought a Hewlett-Packard "4815A RF Vector Impedance Meter".
There is nothing obviously wrong with it, but there was no
probe with it. The probe is definitely non-trivial; the connector
on the front panel has nine coaxial pins in it. So:

Anyone got a spare one lying around they want to sell? :-)

Can anyone suggest a place that sells used H-P stuff, that might
have one?

Anyone know how I can get a service manual or schematic that might
enable me to homebrew a replacement?

(The instrument was made in the early 70's, judging from the date codes
on the components. It covers 0.5 MHz to 110 MHz, and is built like a tank
inside.)

--

Doug Braun Intel Israel, Ltd. M/S: IDC1-41
Tel: 011-972-4-655069 dbraun@inside.intel.com

917. Re: Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 18:34:23 UTC
From: zlau@arrl.org
Message-ID: <2606@arrl.org>
Source record: 119234

In rec.radio.amateur.homebrew, faunt@netcom3.Netcom.COM
(Doug Faunt N6TQS 510-655-8604) writes:
>Can someone give me pointers to amplifiers for 2.4gHz?
>We're trying to build an ATV repeater here with a 13cm output, and we
>need a linear power amp.

Devices to build homebrew amps can be a problem on this
band--I've been looking since 1988.

The AT8140/ATF44101 now sold by HP is good for at least a
watt of linear power (2 watts well into gain compression),
but last I heard they cost $80 new. You can get 13 or 14 dB
of gain at 2.3 GHz, though.

Thompson has some pricey devices ($250+) that are designed
for class C but can probably be forced with a great deal
of effort to be somewhat linear. One way of getting 10
to 20 watts (up to 80 by combining 4 devices). Gain is
usually around 9 or 10 dB. I suspect the usual way hams
get them is as prizes at VHF/microwave conferences.

Water cooled 2C39s supposedly work fine, but may be too much
bother.

I've had some success retuning surplus 6 GHz FETs to work
at 2 GHZ--but each FET seems to a little different. I've
seen 10 to 13 dB of gain and 2 to 3.5 watts out of a 3 watt
device. This might be your best bet--find some surplus
transistors/microwave amps and retune them. From what I've
heard, impedance matched FETs use low pass networks. This
seems right--it was quite obvious that the 6 GHz FET I tried
did not want to work on 10 GHz (-15 dB gain).

For real power, people have modulated microwave ovens for ATV.

The VA 802 Klystron has also been used by amateurs for EME
work (usually run at a conservative 300 to 400 watts) but
these are tough to find.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot

Phone (if you really have to): 203-666-1541

918. Re: Vector Impedance Meter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 19:33:59 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2c0of7$65t@hpscit.sc.hp.com>
Source record: 119235
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

In article <2c0jd7$s0n@ilx049.intel.com>,
Doug Braun <dbraun@iil.intel.com> wrote:
>At a surplus place (the same one that had the (useless) RG-22 cable),
>I bought a Hewlett-Packard "4815A RF Vector Impedance Meter".
>There is nothing obviously wrong with it, but there was no
>probe with it. The probe is definitely non-trivial; the connector
>on the front panel has nine coaxial pins in it. So:
>
>Anyone got a spare one lying around they want to sell? :-)
>
>Can anyone suggest a place that sells used H-P stuff, that might
>have one?
>
>Anyone know how I can get a service manual or schematic that might
>enable me to homebrew a replacement?
>
>--
>Doug Braun Intel Israel, Ltd. M/S: IDC1-41
> Tel: 011-972-4-655069 dbraun@inside.intel.com

It was bad strategy to buy a 4815 without a probe. I hope you
paid less than $1000 for it (better yet less than $500). There
are definitely more 4815's in circulation than probes to go with
them. I'm afraid you'll have to go to HP and buy a probe for
the HP4193A vector impedance meter. As far as I can tell, it is
interchangeable with the old 4815 probe, although the official
HP company position is: we don't support the 4815 anymore.
HP will sell you a microfiche manual however.

As far as homebrewing one is concerned, it could be done if you
are real knowledgeable about the technology (there is enough
information in the manual). You would have the dilemma of
how to get the connector though. HP won't sell you that
separately, so that could be a hassle.

Also, the 4815 you bought may be non-working and the probe
was scavenged for another 4815. The 4815 on my bench has a
non-repairable power supply problem (can't get the replacement
part). I had to bring in an external +20.7 volt power supply
to make it work.

Hope that helps.

Rick Karlquist
HP Santa Clara Division

rkarlqu@scd.hp.com

919. Re: Electronic Keyer Kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-12 22:46:33 UTC
From: sanjesh@eemips.tamu.edu
Message-ID: <2c13o9$3d1@TAMUTS.TAMU.EDU>
Source record: 119237

there is a keyer construction based on microprocessor,
which is very flexible and user friendly.
pl look into ARRL handbook.

-mallik
mallik@aisg.com

920. Re: Electronic Keyer Kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-13 02:21:54 UTC
From: bat@gdstech.GRUMMAN.COM
Message-ID: <BAT.93Nov12212154@gdstech.GRUMMAN.COM>
Source record: 119236
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew

A few years ago, there was an article in QST about the CMOS Super
Keyer II. I bought the kit from Idiom Press, and put it together in
a few hours. It's a 1 chip microprocessor, and you just add some
resistors, switches, a pot and battery holder. Works great.
It has 4 memory positions, and is controlled by Morse commands
on the paddles. Speeds from 6 to 60 on the pot. Works great
in contests, and batteries last for years. Send a sase to Idiom
Press at Box 683, Deerfield, Ill, 60015 for info.
--
--
* Pat Masterson D12-25 | KE2LJ@KC2FD *
* Grumman Data Systems | 516-346-6316. *
* Bethpage, NY 11746 | bat@gdstech.grumman.com *

921. Xtal filter help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-13 06:59:24 UTC
From: jjw@seastar.org
Message-ID: <CGF4r4.F00@seastar.org>
Source record: 119238
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

I've been working on a home-built xtal filter, and have got it working. However, I'm trying to figure out how to match its input & output to the other stages.

I have made a simple bridge circuit, and it appears that the resonant impedance is about 150 ohms. Is this the impedance I need to match to? If not, how do I find the right impedance? I have a decent (60MHz) scope, DMM and a comm analyzer as well as a DDS frequency source and a counter. Is this adequate equipment to build filters, or is there something else I need?

Thanks much for all help... -->jjw@seastar.org

--
John Welch, N9JZW

922. single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-13 16:42:57 UTC
From: atd@cs.rit.edu
Message-ID: <1993Nov13.164257.15906@cs.rit.edu>
Source record: 119239

I have been out of this for a while....

Is the filter method still the most common for SSB generation?
Why?

It seems to me that the phasing method is far superior with today's technology.

al.

923. Hold Function for Radio Shack Frequency Counter (Did It!)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-13 17:31:35 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov13.173135.15860@yuma.ACNS.ColoState.EDU>
Source record: 119240
Cross-posted to:
rec.radio.amateur.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,sci.electronics,rec.radio.scanner

How to add a hold function to the Radio Shack RF Frequency Counter:

Ground TP17. In the schematic, TP17 is pin one of U3, connected to
+5V thru a 47k resistor. On the circuit board, TP17 is on the display
side, just right of the lower-right corner of the IC. Grounds are about
1/4 inch below and to the right, the three non-tinned points in the large
area of metal.

I grounded TP17 directly and the display stopped. After lifting the ground,
the counter resumed counting at the beginning of a sampling cycle.

Personally, I would ground TP17 thru a 1k resistor. I haven't performed
the mod to my RS counter, since the pads are VERY small and my fine-tip
iron is at work. I will try the 1k Hold mod on Monday and give a report
(unless somebody beats me to it).

An amplifier mod to increase the sensitivity is in the works, reports to follow.

Happy Trails to You,
Galen, KF0YJ

924. CATV Jerrold/450/550 mods wanted

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-13 20:28:44 UTC
From: chare@nmsu.edu
Message-ID: <2c3g1sINNl7m@dns1.NMSU.Edu>
Source record: 119242

Subject: I need Jerrold 450-550 mods
Newsgroups: alt.dcom.catv
Organization: New Mexico State University, Las Cruces, NM
Summary:
Keywords:

I need service manuals or modifications to enable descrambling to be on
all the time for the following Jerrold Models:

Jerrold 450 Model DRZD-2A
Jerrold Starcom VI 550 DP5-222

These are combination converter/descrambler units.....
Please help...Thanks..

925. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-14 02:01:54 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov14.020154.9354@ke4zv.atl.ga.us>
Source record: 119241

In article <1993Nov13.164257.15906@cs.rit.edu> atd@cs.rit.edu (Albert T Davis) writes:
>
>I have been out of this for a while....
>
>Is the filter method still the most common for SSB generation?
>Why?
>
>It seems to me that the phasing method is far superior with today's technology.
>
>al.

It remains difficult to achieve a precise 90 degree phase shift over
3 octaves of audio frequencies. DSP offers the potential to solve that
problem though.

Gary
--
Gary Coffman KE4ZV | Life's a journey, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | not a destination. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Live it. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

926. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-14 07:08:43 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2c4lhr$6pi@hpscit.sc.hp.com>
Source record: 119243

In article <1993Nov13.164257.15906@cs.rit.edu>,
Albert T Davis <atd@cs.rit.edu> wrote:
>
>I have been out of this for a while....
>
>Is the filter method still the most common for SSB generation?
>Why?
>
>It seems to me that the phasing method is far superior
with today's technology.
>
>al.

The phasing method of SSB is principally a ham radio technique.
Other services that have to meet FCC requirements reliably never, to
my knowledge, attempted to use phasing SSB. Basically, the problem
you run into is that it is difficult to get enough carrier suppression
without hitting the mixer so hard that you get too much audio distortion
and splatter. The ham rigs had adjustments to get the mixer perfectly
balanced (at least at one temperature) to get around this, but that
would be undesirable commercially. On the other hand, with active
audio phase shift networks and divide by 4 RF drive, you can actually
get pretty decent unwanted sideband suppression, except for amplitude
balance, which is still a crapshoot. Also, ham rigs could get by with
more distortion and splatter that the FCC normally allows. For example,
may popular ham linears won't meet FCC commercial regs that say 11th
order intermod has to be down 60 dB. or thereabouts. (It's been 15
years since I designed HP marine radios so don't hold me to the
exact number). Commercial rigs use asymmetrical
SSB filters that have very steep slopes on one side to filter out the
residual carrier. The demise of the separate transmitter and receiver
pretty much eliminated any remaining reason for using the phasing system
since you are going to have a crystal filter for receive anyway, so
you might as well use it. Regarding the legendary audio quality of
phasing rigs (I don't know how much truth there was to that), you can
get excellent audio quality with a filter rig by using a really good
filter. The 5 MHz. ones used for the old FDM analog telephone trunks
are excellent. You can still buy them from a company called Lumda.
Of course, with everyone running a speech compressor these days, I
don't think high fidelity is a priority except with the Ancient
Modulation gang.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

927. Re: Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-14 18:03:10 UTC
From: mack@fcs260c.ncifcrf.gov
Message-ID: <CGHu5A.7oJ@ncifcrf.gov>
Source record: 119245

In article <2606@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, faunt@netcom3.Netcom.COM
> (Doug Faunt N6TQS 510-655-8604) writes:
>>Can someone give me pointers to amplifiers for 2.4gHz?
>>We're trying to build an ATV repeater here with a 13cm output, and we
>>need a linear power amp.
>
>Devices to build homebrew amps can be a problem on this
>band--I've been looking since 1988.
>
>The AT8140/ATF44101 now sold by HP is good for at least a
>watt of linear power (2 watts well into gain compression),
>but last I heard they cost $80 new. You can get 13 or 14 dB
>of gain at 2.3 GHz, though.
>
>Thompson has some pricey devices ($250+) that are designed
>for class C but can probably be forced with a great deal
>of effort to be somewhat linear. One way of getting 10
>to 20 watts (up to 80 by combining 4 devices). Gain is
>usually around 9 or 10 dB. I suspect the usual way hams
>get them is as prizes at VHF/microwave conferences.
>
>Water cooled 2C39s supposedly work fine, but may be too much
>bother.
>
>I've had some success retuning surplus 6 GHz FETs to work
>at 2 GHZ--but each FET seems to a little different. I've
>seen 10 to 13 dB of gain and 2 to 3.5 watts out of a 3 watt
>device. This might be your best bet--find some surplus
>transistors/microwave amps and retune them. From what I've
>heard, impedance matched FETs use low pass networks. This
>seems right--it was quite obvious that the 6 GHz FET I tried
>did not want to work on 10 GHz (-15 dB gain).
>
>For real power, people have modulated microwave ovens for ATV.
>
>The VA 802 Klystron has also been used by amateurs for EME
>work (usually run at a conservative 300 to 400 watts) but
>these are tough to find.
>
>Zack Lau KH6CP/1
>
>Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
> Operating Interests: 10 GHz CW/SSB/FM

>US Mail: c/o ARRL Lab 80/40/20 CW
> 225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
> Newington CT 06111 modes: CW/SSB/FM/packet
> amtor/baudot
>Phone (if you really have to): 203-666-1541

How about a travelling wave tube? Theere's a guy in Ellicot City, MD,
Jeff Kreuth who services these things and has used ones for sale at reasonable
($200) prices. I'll find his ph# if you like.
Joe Mack NA3T
mack@ncifcrf.gov

928. Electronic surplus stores

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 02:51:26 UTC
From: dmcgann@acsu.buffalo.edu
Message-ID: <CGIILr.BFv@acsu.buffalo.edu>
Source record: 119244
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sunyab.org.ham-radio

I was just wondering if anybody knew of any good electronic surplus stores
in buffalo,ny or the surrounding area. Thanks in advance

dave
"I'm gonna die when its time for me to die
so let me live my life, the way I want to."

-jimi marshall hendrix

929. Re: Xtal filter help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 04:06:02 UTC
From: drew@trl.oz.au
Message-ID: <drew.80.0@trl.oz.au>
Source record: 119246
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

In article <CGF4r4.F00@seastar.org> jjw@seastar.org (John Welch) writes:
>From: jjw@seastar.org (John Welch)
>Subject: Xtal filter help.
>Date: Sat, 13 Nov 1993 06:59:24 GMT
>
> I've been working on a home-built xtal filter, and have got it
>working. However, I'm trying to figure out how to match its input &
>output to the other stages.
>
> I have made a simple bridge circuit, and it appears that the
>resonant impedance is about 150 ohms. Is this the impedance I need to
>match to? If not, how do I find the right impedance? I have a decent
>(60MHz) scope, DMM and a comm analyzer as well as a DDS frequency
>source and a counter. Is this adequate equipment to build filters, or
>is there something else I need?
>
> Thanks much for all help... -->jjw@seastar.org
>
>--
>John Welch, N9JZW

Hi John. Here are three recent articles which (IMHO) are really good. Try to look up:-

(1) "Designing and Building Simple Crystal Filters"
by Wes Hayward, W7ZOI, QST July '87.

(2) "Switchable Bandwidth Crystal Filter"
by John Pivnichny, N2DCH, Ham Radio Feb. '90 and

(3) "Twin Crystal Ladder Filters"
by John Pivnichny, 73 Amateur Radio Today, Jan. '93.

From my own observations, impedance match (or mismatch) appears to have a marked effect upon pass-band ripple, and less upon pass-band attenuation. It breaks my heart to see fellows agonizing over one or two dB of pass-band ripple, when in practice a few dB will be hardly noticable on an SSB signal.

However, significantly steeper slopes and greater stop-band attenuation than shown in (say) (1) may be had by building the filter in a compartmented box type construction, using circuit board or brass sheet so that no crystal can "see" another crystal, and the input is well separated from the output.

73, Drew, VK3XU.

930. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 12:00:25 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-753364821@unomaha.edu>
Source record: 119247
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 2.4
Archive-name: radio/personal-intro
Revision: 1.5 09/18/93 16:49:31
Changes: new mailing lists, .packet rmgroup, and .policy updates

(Note: The following is reprinted with the permission of the author.)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 18 September
1993 to add the mailing lists for the new rec.radio.amateur newsgroups, to
note the rmgroup of rec.radio.amateur.packet, and to officially retire some
(in)famous threads of discussion on rec.radio.amateur.policy.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
arrangement, but one was that the system was not supposed to be used for
commercial purposes. Since one of hams' favorite pastimes is swapping
gear, it was natural for hams to post messages about equipment for sale
to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use
restriction, and after some argument, a group was created specifically
```

for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize

this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, should be removed by September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas,

commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
===========================

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

931. Re: What's RG-22?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 15:48:26 UTC
From: kstuart@oasys.dt.navy.mil
Message-ID: <69684@oasys.dt.navy.mil>
Source record: 119248
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.antenna

Well, I had about a thousand feet of the stuff. It's basically discontinued, although TIMES wire and cable still carries it, I think.

Yep, it is 95 ohm, twin conductor. Essentially shielded 95 ohm twin lead. However, the info that I had indicates that the conductor insulation was rubber and that the loss was pretty bad above HF.

Makes good zip cord, though...

Ken Stuart, W3VVN

932. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 15:52:39 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov15.155239.54713@yuma.ACNS.ColoState.EDU>
Source record: 119249

In article <1993Nov14.020154.9354@ke4zv.atl.ga.us> gary@ke4zv.UUCP (Gary Coffman) writes:
>In article <1993Nov13.164257.15906@cs.rit.edu> atd@cs.rit.edu (Albert T Davis) writes:
>>I have been out of this for a while....
>>Is the filter method still the most common for SSB generation?
>>It seems to me that the phasing method is far superior with today's technology
>>al.
>It remains difficult to achieve a precise 90 degree phase shift over
>3 octaves of audio frequencies. DSP offers the potential to solve that
>problem though.
>Gary Coffman KE4ZV | Life's a journey, | gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | not a destination. | uunet!rsiatl!ke4zv!gary
>534 Shannon Way | Live it. | emory!kd4nc!ke4zv!gary
>Lawrenceville, GA 30244 | |

In the April, 93 issue of QST is the 'Multimode Phasing Exciter' alias the
T2 board. Uses 1% componenets in the phase shift network. I have the board
(along with the companion R2) but I haven't built it, as I can't decide if
I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
phase shift for the RF, which I can get for 440 from Mini-Circuits.

Anybody built these boards and willing to talk?

Galen, KF0YJ

933. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 16:45:50 UTC
From: atd@cs.rit.edu
Message-ID: <1993Nov15.164550.18931@cs.rit.edu>
Source record: 119251

Richard Karlquist writes:
>The phasing method of SSB is principally a ham radio technique.
>Other services that have to meet FCC requirements reliably never, to
>my knowledge, attempted to use phasing SSB. Basically, the problem
>you run into is that it is difficult to get enough carrier suppression
>without hitting the mixer so hard that you get too much audio distortion
>and splatter. The ham rigs had adjustments to get the mixer perfectly
>balanced (at least at one temperature) to get around this, but that
>would be undesirable commercially. ....

This is why they abandoned the phasing method back in the days of tubes.
It was all true then. It was difficult to get even 20 db or so of
carrier and alt sideband suppression. Even discrete transistor circuits
are probably not good enough here. How much carrier suppression is
required? It seems to me that today's IC's should be able to do it.
If not, generate it at a low IF and use a simple notch.

> .... On the other hand, with active
>audio phase shift networks and divide by 4 RF drive, you can actually
>get pretty decent unwanted sideband suppression, except for amplitude
>balance, which is still a crapshoot. ....

Why is amplitude balance a crapshoot? With op-amp circuits it should be
easy, for the audio. You might have a valid argument on the RF side.
Can you explain?

> ...... Also, ham rigs could get by with
>more distortion and splatter that the FCC normally allows. For example,
>may popular ham linears won't meet FCC commercial regs that say 11th
>order intermod has to be down 60 dB. or thereabouts. (It's been 15
>years since I designed HP marine radios so don't hold me to the
>exact number).

Isn't the problem mostly in the linear amp? If this is the case I don't
see how the method of generating SSB should change that. 15 years ago,
the technology was not good enough. I agree.

Commercial rigs use asymmetrical
>SSB filters that have very steep slopes on one side to filter out the
>residual carrier. The demise of the separate transmitter and receiver
>pretty much eliminated any remaining reason for using the phasing system

> ....
>since you are going to have a crystal filter for receive anyway, so
>you might as well use it. ......

Actually, I was thinking of using the phasing method for receive too, thereby eliminating the need for the expensive crystal filter. Convert early. Use a simple LC filter, similar to that used in the first IF of a dual conversion receiver, then do most of the amplification and filtering at audio. It is probably necessary to amplify the I and Q channels separately because the phase shift is likely to be noisy. It is easier to design a good audio amplifier than a good RF amplifier.

I have designed and build audio filters with slopes that put any RF filters I have ever seen to shame. Doing the filtering at audio makes it easy to have truly variable bandwidth, notch filters (pre and post mixing) and other signal processing. It seems to me that this benefit would be too great to pass up.

> .... Regarding the legendary audio quality of
>phasing rigs (I don't know how much truth there was to that), you can
>get excellent audio quality with a filter rig by using a really good
>filter.

No argument here. My HW-101 crystal filter has about 10 db ripple. But, good filters are expensive. Most of them can be improved by tuning the load capacitance.

My point and original question is that with today's technology ... wideband low noise op-amps, switched capacitor filters, IC mixers, possibly custom IC's .... the filter method may have seen its day and it makes sense to take another look at the phasing method. This was certainly not true 15 years ago.

934. Low-cost VHF amplifier application note

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 17:16:06 UTC
From: holland@gasmac.dom.uab.edu
Message-ID: <holland-151193111058@beagley.dom.uab.edu>
Source record: 119250

One person asked about what application note had a reference to a vhF power amplifier. I got several frol motorola. One, a broadband 300 watt amplifier from 10 to 300 MHz was interesting until I saw the power transistor alone cost about $300 in quantity of one. A much more affordible amplifier was described in engineering Bulletin EB-90, Low-cost VHF amplifier has broadband performance. It uses the MRF 260 and MRF 262 and includes the PCB pattern in the note. 15 Watts output at 146 MHz.

Darn, I realize I had another note for a higher note for a higher power amplifier which included an automatic T/R relay in the design. I'll post on that when I bring it into work.

Steve Holland

935. RS FREQ COUNTER HOLD MOD!!!!!!!!!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 19:15:32 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov15.191532.82222@yuma.ACNS.ColoState.EDU>
Source record: 119252
Cross-posted to:
sci.electronics,rec.radio.amateur.misc,rec.radio.scanner,rec.radio.amateur.equipment,rec.radio.amateur.homebrew

How to add a hold function to the Radio Shack RF Frequency Counter:

Ground TP 17. In the schematic, TP17 is pin one of U3, connected to +5V thru a 47k resistor. On the circuit board, TP17 is on the display side, just right of the lower-right corner of the IC. Grounds are about 1/4 inch below and to the right, the three non-tinned points in the large area of metal. TP17 is the tinned pad next to a SM resistor marked '473' for 47k.

I rigged a momentary switch to ground TP17 thru a 1k resistor (you never can tell) and it works just fine! I drilled a small hole to mount the switch just above the plastic depression so I could push the button with my right thumb. A small toggle switch would fit.

I'll be trying the other TP's to see what wonderful things RS didn't put on the front.

Galen, KF0YJ

936. Re: Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 19:20:42 UTC
From: lkollar@nyx10.cs.du.edu
Message-ID: <1993Nov15.192042.6993@mnemosyne.cs.du.edu>
Source record: 119253

zlau@arrl.org (Zack Lau) writes:

>For real power, people have modulated microwave ovens for ATV.

Ah, here's something I've been meaning to ask about!

I gutted my mother-in-law's nuke when it went bad -- I think the (tapped
inductor? autotransformer? a long round thing with three connections,
anyway :-) is the culprit. It looks a little burnt. The magnetron has
a Fujitsu label on it, and looks fine.

What kind of circuits are there that utilize oven magnetrons? I have the
ARRL UHF/uWave handbook, but there's precious little in there for liberating
consumer goods such as nukes and fuzzbusters.

Vowing to get a signal through my trees one way or another :-), I am --
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think every ham
lkollar@nyx.cs.du.edu | should have to learn it.
"You mean you came back from the dead, to tell me I'm *odd*?"

937. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 20:24:11 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2c8ohb$abo@hpscit.sc.hp.com>
Source record: 119254

In article <1993Nov15.164550.18931@cs.rit.edu>,
Albert T Davis <atd@cs.rit.edu> wrote:
>
>This is why they abandoned the phasing method back in the days of tubes.
>It was all true then. It was difficult to get even 20 db or so of
>carrier and alt sideband suppression. Even discrete transistor circuits
>are probably not good enough here. How much carrier suppression is
>required? It seems to me that today's IC's should be able to do it.

Regarding IC's as balanced modulators: "today's" IC's (i.e. MPY600)
are not necessarily any better than 1970's IC's (i.e. MC1496) in terms
of balance. They just run at higher frequencies. Probably the best
that can be hoped for is internally trimmed IC's. This is better than
a 1496 w/o external trimming, but not as good as an externally tweaked
1496. The other problem with Gilbert cell IC's is that to get good
IMD, you have to operate them at very low levels. This exascerbates
the carrier suppression problem because the signal is small compared
to the carrier. Since Gilbert cells have high noise levels, dynamic
range is a big problem.

>If not, generate it at a low IF and use a simple notch.

Because even for a 20 kHz. IF, "a simple notch" is quite difficult to
implement. That's a whole separate discussion.

>
>> .... On the other hand, with active
>>audio phase shift networks and divide by 4 RF drive, you can actually
>>get pretty decent unwanted sideband suppression, except for amplitude
>>balance, which is still a crapshoot. ....
>
>Why is amplitude balance a crapshoot? With op-amp circuits it should be
>easy, for the audio. You might have a valid argument on the RF side.
>Can you explain?

Like you said, you can make the audio network about as good as you
want fairly easily by using .1% resistors and 1% capacitors along
with 50 MHz. opamps in a state variable configuration. That would
probably be good for 60 dB. opposite sideband rejection (if it were
the only factor). You can get the LO phase difference as close
as you want to 90 degrees by using a sufficiently fast flip flop.
You can get the RF in-phase splitter just about perfect by using 1%
51 ohm resistors. The crapshoot part is that you don't have perfectly
matched mixers, either in amplitude or phase. I suppose you could
put in sockets and try a bunch of them. Remember that as a rule of
thumb, all errors must be less than 1% to get 40 dB. rejection.

>
>> ..... Also, ham rigs could get by with
>>more distortion and splatter that the FCC normally allows. For example,
>>may popular ham linears won't meet FCC commercial regs that say 11th
>>order intermod has to be down 60 dB. or thereabouts. (It's been 15
>>years since I designed HP marine radios so don't hold me to the
>>exact number).
>
>Isn't the problem mostly in the linear amp? If this is the case I don't
>see how the method of generating SSB should change that. 15 years ago,
>the technology was not good enough. I agree.

Well, now that you mention it, the 11th order stuff was mainly
crossover distortion in the power amp. However, the MC1496 mixers
gave us a lot of trouble with 3rd order IMD, which is also spec'ed, but
not at 60 dB. Most ham linears don't meet commercial 3rd order IMD.

>
>Actually, I was thinking of using the phasing method for receive too,
>thereby eliminating the need for the expensive crystal filter. Convert
>early. Use a simple LC filter, similar to that used in the first IF
>of a dual conversion receiver, then do most of the amplification and
>filtering at audio. It is probably necessary to amplify the I and Q
>channels separately because the phase shift is likely to be noisy.
>It is easier to design a good audio amplifier than a good RF amplifier.

Of course the problem with this method is you will be limited to
40 dB. or so selectivity for the opposite sideband (which is really
the adjacent "channel" so to speak.) That is pretty lousy receiver
performance.

>
>I have designed and build audio filters with slopes that put any RF
>filters I have ever seen to shame. Doing the filtering at audio
>makes it easy to have truly variable bandwidth, notch filters (pre
>and post mixing) and other signal processing. It seems to me that
>this benefit would be too great to pass up.

OK, now I see where you're coming from!

What you really want to do is: instead of the phasing method of SSB,
use the Weaver method of SSB (also called the "third" method, or the
zero IF method). In this method, you build a direct conversion
receiver with the IF centered at zero Hz. (DC). A conventional
direct conversion receiver has the "carrier" frequency at DC but the
IF is centered at 1.5 kHz. (for a 3 kHz. BW). As with the phasing
method, you use dual mixers in quadrature. You then need an additional
pair of mixers driven at 1.5 kHz. to combine the audio from the I and
Q IF's. Now what happens is that the audio selectivity equals the
RF selectivity so there is no limit to the skirt selectivity you
can get. Imperfections in the mixer balance, phase and amplitude
errors do not cause reception of out of band signals. Instead,
they result in aliasing of high frequencies to low frequencies

and vice versa. But that just causes a little audio distortion (40 dB. = 1 %). LO leak thru results in a 1.5 kHz. tone in the audio. That *is* fairly easy to notch out. Go ahead, build this system and write it up for Communications Quarterly. I'll be interested to see how well you can do.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

938. Re: Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-15 20:39:16 UTC
From: dfeldman@teal.csn.org
Message-ID: <CGJw1H.DCr@csn.org>
Source record: 119255

```
>
>How about a travelling wave tube? Theere's a guy in Ellicot City, MD,
>Jeff Kreuth who services these things and has used ones for sale at reasonable
>($200) prices. I'll find his ph# if you like.
>Joe Mack NA3T
>mack@ncifcrf.gov
>

Who?
```

939. Lo-Fer, Med-Fer, Hi-Fer (have questions, need elmer)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 04:16:14 UTC
From: andrews@fms.com
Message-ID: <CGKH73.1u7@fms.com>
Source record: 119256

Hello all,

Could somebody send me the tech info on the 'Fers' and the rules
and reg's???

Better yet, start a new thread...

--
Tell Me Something I Don't Know, ! HAM = N8OFS
Show Me Something I Can Use, ! ARMY MARS = AAN5HJT
Push The Buttons, ! CB = THE NEON KNIGHT
Connect The God-Damn Dots!!! - Ministry ! HACKER = TH3 N30N KN16Ht

940. Re: Electronic surplus stores

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 04:30:00 UTC
From: v125pemm@ubvms.cc.buffalo.edu
Message-ID: <CGKHr9.DJu@acsu.buffalo.edu>
Source record: 119257
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,sunyab.org.ham-radio

In article <CGIILr.BFv@acsu.buffalo.edu>, dmcgann@acsu.buffalo.edu (David D Mcgann) writes...
>I was just wondering if anybody knew of any good electronic surplus stores
>in buffalo,ny or the surrounding area. Thanks in advance
>
>dave
> "I'm gonna die when its time for me to die
> so let me live my life, the way I want to."
>
>
-jimi marshall hendrix

The only one I know of is Salvage Sams on Walden Ave in Lancaster.
He is only open certian Hours though.

Tim O'Hara
V125PEMM@UBVMS .....
tohara@acsu ....

941. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 07:55:30 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <2ca11i$ojh@cc.tut.fi>
Source record: 119258

Richard Karlquist (rkarlqu@scd.hp.com) wrote:

[about using phasing receivers]

> Of course the problem with this method is you will be limited to
> 40 dB. or so selectivity for the opposite sideband (which is really
> the adjacent "channel" so to speak.) That is pretty lousy receiver
> performance.

This is a problem in crowded bands, but what about less crowded VHF/UHF bands ? Most likely the "adjacent" channel contains only white noise. Going from 0 dB opposite sideband suppression (DSB) to infinite (SSB) will improve the SNR by 3 dB. A very modest 10 dB opposite sideband suppression will give 2.5 dB improvement in SNR.

On the transmitter side, if the most important factor is not spectral effiency, a 10 - 20 dB opposite sideband suppression should be enough. The reduction of the power level of the desired sideband would be hardly noticable.

As long as such rigs are used only on bands with low activity, modest opposite sideband suppression should not hurt anyone. It is better to have some activity on these bands than no activity at all.

Paul OH3LWR

Phone : +358-31-213 3657
X.400 : G=Paul S=Keinanen O=Elisa-Tampere A=ELISA C=FI
Internet: Paul.Keinanen@Telebox.tele.fi
Telex : 58-100 1825 (ATTN: Keinanen Paul)
Mail : Hameenpuisto 42 A 26
FIN-33200 TAMPERE
FINLAND

942. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 13:15:36 UTC
From: dstock@hpqmoca.sqf.hp.com
Message-ID: <CGL661.3uD@hpqmoea.sqf.hp.com>
Source record: 119259

As has been already mentioned, good alternate sideband rejection still requires better than reasonably achievable gain and phase precision to get exact cancellation.

Subtraction processes are always bad on accuracy requirement.

I don't see anyone putting much more effort into this area. DSP is fast becoming cheap, and it is possible to create really good SSB at a low IF using DSP and the sort of 12 bit DAC aimed at the Graphics and DDS markets. This will give a system with no adjustments, no setting up, and no temperature stability problems.

Receivers are more demanding and ADC performance development tends to lag DAC developments. There are receivers on sale that digitise a low IF and then use DSP, but ADC performance is not yet such as to allow competition with the best analogue filter based receivers. Ring-proof CW filters could prove popular!

Cheers
David GM4ZNX

943. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 16:38:07 UTC
From: jbloom@arrl.org
Message-ID: <2614@arrl.org>
Source record: 119260

In rec.radio.amateur.homebrew, rkarlqu@scd.hp.com (Richard Karlquist) writes:
>What you really want to do is: instead of the phasing method of SSB,
>use the Weaver method of SSB (also called the "third" method, or the
>zero IF method). In this method, you build a direct conversion
...[deleted]...
>audio. That *is* fairly easy to notch out. Go ahead, build this
>system and write it up for Communications Quarterly. I'll be
>interested to see how well you can do.

See September 1993 QEX, "A Different Weave of SSB Receiver," by
P. Anderson, KC1HR. (There is also a Weaver-method generator
implemented using DSP in the same issue.)

Jon Bloom, KE3Z | jbloom@arrl.org
American Radio Relay League |
225 Main St., Newington CT 06111 |

944. Re: Low-cost VHF amplifier application note

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 17:44:51 UTC
From: gila005@uabdpo.dpo.uab.edu
Message-ID: <gila005-161193124904@spam.dom.uab.edu>
Source record: 119261

In article <holland-151193111058@beagley.dom.uab.edu>,
holland@gasmac.dom.uab.edu (Steve Holland) wrote:
>
> One person asked about what application note had a reference to
> a vhF power amplifier. I got several frol motorola. One, a
> broadband 300 watt amplifier from 10 to 300 MHz was interesting
> until I saw the power transistor alone cost about $300 in quantity
> of one. A much more affordible amplifier was described in
> engineering Bulletin EB-90, Low-cost VHF amplifier has broadband
> performance. It uses the MRF 260 and MRF 262 and includes the
> PCB pattern in the note. 15 Watts output at 146 MHz.
>
> Darn, I realize I had another note for a higher note for a higher
> power amplifier which included an automatic T/R relay in the
> design. I'll post on that when I bring it into work.

The other note of interest is AN-791m a 75W and 35W power amp optimized
for 144-148 MHz. It has a built in carrier operated relay, which stays
up in SSB and CW with a built in delay on releasing the relay.

To the person who emailed me, the responses bounced.

There are kits for these amps from communication concepts,
508 Millstone Drive
Beaver Creek OH 45434-5840
513-426-8600

The 35 watt and 75 watt amps are $80 and $120 respectivley.

Does anyone have experience dealing with them?

Steve Holland

945. Re: Low-cost VHF amplifier application note

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 18:41:46 UTC
From: jeffh@ludwig.cc.uoregon.edu
Message-ID: <2cb6ta$mj7@pith.uoregon.edu>
Source record: 119262

In article <gila005-161193124904@spam.dom.uab.edu> gila005@uabdpo.dpo.uab.edu (Stephen Holland) writes:
> In article <holland-151193111058@beagley.dom.uab.edu>,
> holland@gasmac.dom.uab.edu (Steve Holland) wrote:
> >
> > One person asked about what application note had a reference to
> > a vhF power amplifier. I got several frol motorola. One, a
> > broadband 300 watt amplifier from 10 to 300 MHz was interesting
> > until I saw the power transistor alone cost about $300 in quantity
> > of one. A much more affordible amplifier was described in
> > engineering Bulletin EB-90, Low-cost VHF amplifier has broadband
> > performance. It uses the MRF 260 and MRF 262 and includes the
> > PCB pattern in the note. 15 Watts output at 146 MHz.
> >
> > Darn, I realize I had another note for a higher note for a higher
> > power amplifier which included an automatic T/R relay in the
> > design. I'll post on that when I bring it into work.
>
> The other note of interest is AN-791m a 75W and 35W power amp optimized
> for 144-148 MHz. It has a built in carrier operated relay, which stays
> up in SSB and CW with a built in delay on releasing the relay.
>
> To the person who emailed me, the responses bounced.
>
> There are kits for these amps from communication concepts,
> 508 Millstone Drive
> Beaver Creek OH 45434-5840
> 513-426-8600
>
> The 35 watt and 75 watt amps are $80 and $120 respectivley.
>
> Does anyone have experience dealing with them?
>
> Steve Holland

I assembled the 35W version about 6 yrs ago...used it for about 3 and sold it at a hamfest. Worked fine for me and was fairly easy to put together, would have been nice to have a pre-amp though.

--
Jeff Hite KF7SZ
Computing Center
U of Oregon
jeffh@ludwig.cc.uoregon.edu

946. Re: Power amplifier at 2.4gHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 18:46:56 UTC
From: edw@sequent.com
Message-ID: <1993Nov16.184656.29955@sequent.com>
Source record: 119263

In article <CGJw1H.DCr@csn.org> dfeldman@teal.csn.org (Dave Feldman) writes:
>>
>>How about a travelling wave tube? Theere's a guy in Ellicot City, MD,
>>Jeff Kreuth who services these things and has used ones for sale at reasonable
>>($200) prices. I'll find his ph# if you like.
>>Joe Mack NA3T
>>mack@ncifcrf.gov
>>
Oh boy a TWAT for only $200 ! :-)
Who said UHF isn't fun
--
I think I've got the hang of it now .... :w :q :wq :wq! ^d X exit ^X^C ~.
^[x X Q :quitbye CtrlAltDel ~~q :~q logout save/quit :!QUIT ^[zz ^[ZZ
ZZZZ ^H ^@ ^L ^[c $q ^# ^E ^X ^I ^T ? help helpquit ^D ^d ^C ^c help
^]q exit ?Quit ?q anybackbone!sequent!edw edw@sequent.COM KA9AHQ 28.340

947. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 21:55:28 UTC
From: wmeahan@ef0424.efhd.ford.com
Message-ID: <wmeahan.13.2CE94C50@ef0424.efhd.ford.com>
Source record: 119264

In article <1993Nov15.164550.18931@cs.rit.edu> atd@cs.rit.edu (Albert T Davis) writes:
>From: atd@cs.rit.edu (Albert T Davis)
>Subject: Re: single sideband
>Date: Mon, 15 Nov 1993 16:45:50 GMT

>Richard Karlquist writes:
>>The phasing method of SSB is principally a ham radio technique.

>This is why they abandoned the phasing method back in the days of tubes.
>It was all true then. It was difficult to get even 20 db or so of
>carrier and alt sideband suppression.

True for systems that attempted to generate the SSB signal at the operating frequency, but not necessarily true otherwise. The Gonset GSB-100 that was my first voice transmitter generated the SSB signal via phasing at 9.00 MHz (easy enough to get good suppression at a single, FIXED frequency) and used a single crystal notch filter to further reduce any remaining carrier. Operation on the various bands then required mixing with an appropriate frequency just like the filter rigs.

As I recall, I always got comments on how good my voice quality was while still getting adequate suppression.

73 de WA8TZG
--
Bill Meahan |EFHD Information Systems Staff
Computer Applications Engineer |Ford Motor Company
wmeahan@ef0424.efhd.ford.com |I don't speak for Ford, just me
"Managing a software project is like herding cats"

948. Re: Low-cost VHF amplifier application note

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 22:42:25 UTC
From: dts@world.std.com
Message-ID: <CGLwEq.LI6@world.std.com>
Source record: 119265

In article <gila005-161193124904@spam.dom.uab.edu> gila005@uabdpo.dpo.uab.edu (Stephen Holland) writes:
>In article <holland-151193111058@beagley.dom.uab.edu>,
>holland@gasmac.dom.uab.edu (Steve Holland) wrote:
>>
>> One person asked about what application note had a reference to
>> a vhF power amplifier. I got several frol motorola. One, a
>> broadband 300 watt amplifier from 10 to 300 MHz was interesting
>> until I saw the power transistor alone cost about $300 in quantity
>> of one. A much more affordible amplifier was described in
>> engineering Bulletin EB-90, Low-cost VHF amplifier has broadband
>> performance. It uses the MRF 260 and MRF 262 and includes the
>> PCB pattern in the note. 15 Watts output at 146 MHz.
>>
>> Darn, I realize I had another note for a higher note for a higher
>> power amplifier which included an automatic T/R relay in the
>> design. I'll post on that when I bring it into work.
>
>The other note of interest is AN-791m a 75W and 35W power amp optimized
>for 144-148 MHz. It has a built in carrier operated relay, which stays
>up in SSB and CW with a built in delay on releasing the relay.
>
>To the person who emailed me, the responses bounced.
>
>There are kits for these amps from communication concepts,
>508 Millstone Drive
>Beaver Creek OH 45434-5840
>513-426-8600
>
>The 35 watt and 75 watt amps are $80 and $120 respectivley.
>
>Does anyone have experience dealing with them?
>
>Steve Holland

I have built one of each size. The 75 watt one has been on a repeater for quite some time now (over a year). I had to rebuild it a while back because the RF sensing circuit was chattering the relay. I do not know why, but the amplifier was going into oscillation. For the repeater case, I just added a jumper so that when power is present, the relay is pulled down, putting the amp into line. The only reason I did not eliminate the relay altogether is that we want the amp out of line when the AC power fails. For repeater use, I added a fan on the heatsink.

I loaned out the 35 watt model and a power supply to a new ham who had been in one of my ham radio classes (I do LOTS of elmering!) and it worked fine for a few days, then it developed the same problem with oscillation. Fixing this one is harder, since I really DO want the RF sense switch to work. I tried rebiasing the thing to class C, but there is still a problem with oscillation after the first time RF is applied. This one is going to wind up in the hands of the master (WA1RHP, an expert at solid state amplifiers), to see if he can get it to work.

The old adage is true: you try to build an amplifier and you get an oscillator. Try to build an oscillator and you get an amplifier!

If you are looking for a finished product, look at TE systems or RF Concepts. (Stay away from Mirage).

--

Daniel Senie Internet: dts@world.std.com
Daniel Senie Consulting n1jeb@world.std.com
508-365-5352 Compuserve: 74176,1347

949. Maxon?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-16 23:14:49 UTC
From: henryc@panix.com
Message-ID: <2cbmt9$4u5@panix.com>
Source record: 119266

Does anyone know of a telephone # and address for Maxon? I'm looking for a retail outlet that carries their 49 MHz line of walkie talkies. I'm looking for walkie talkies in this range with have an ear-mike feature. I tried Radio Shack, they have a model which has five channels, but doesn't have the ear-mike feature. I was told that Maxon makes most of the Radio Shack models, and they would probably have what I'm looking for under their own brand name.

--
HenryC@panix.com

950. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 01:39:25 UTC
From: decarlis@mtu.edu
Message-ID: <2cbvcd$m8q@maxwell21.ee>
Source record: 119267

Galen Watts (galen@picea.CFNR.ColoState.EDU) wrote:
: In article <1993Nov14.020154.9354@ke4zv.atl.ga.us> gary@ke4zv.UUCP (Gary Coffman) writes:
: >In article <1993Nov13.164257.15906@cs.rit.edu> atd@cs.rit.edu (Albert T Davis) writes:
: >>I have been out of this for a while....
: >>Is the filter method still the most common for SSB generation?
: >>It seems to me that the phasing method is far superior with today's technology
: >>al.
: >It remains difficult to achieve a precise 90 degree phase shift over
: >3 octaves of audio frequencies. DSP offers the potential to solve that
: >problem though.
: >Gary Coffman KE4ZV | Life's a journey, | gatech!wa4mei!ke4zv!gary
: >Destructive Testing Systems | not a destination. | uunet!rsiatl!ke4zv!gary
: >534 Shannon Way | Live it. | emory!kd4nc!ke4zv!gary
: >Lawrenceville, GA 30244 | |

: In the April, 93 issue of QST is the 'Multimode Phasing Exciter' alias the
: T2 board. Uses 1% componenets in the phase shift network. I have the board
: (along with the companion R2) but I haven't built it, as I can't decide if
: I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
: phase shift for the RF, which I can get for 440 from Mini-Circuits.

: Anybody built these boards and willing to talk?

: Galen, KF0YJ

Why buy a phase shifter for RF?
...just use a 1/4 wave piece of transmission line after the power divider...

951. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 03:38:08 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2cc6b0$cha@hpscit.sc.hp.com>
Source record: 119168

In article <2cbvcd$m8q@maxwell21.ee>,
Daniel E. Carlisle <decarlis@mtu.edu> wrote:
>Galen Watts (galen@picea.CFNR.ColoState.EDU) wrote:

>: (along with the companion R2) but I haven't built it, as I can't decide if
>: I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
>
>: Galen, KF0YJ
>

>Why buy a phase shifter for RF?
>...just use a 1/4 wave piece of transmission line after the power divider...
>

The 1/4 wave line gets kinda long on 1750m!

952. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 08:44:28 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov17.084428.27117@ke4zv.atl.ga.us>
Source record: 119169

In article <2c8ohb$abo@hpscit.sc.hp.com> rkarlqu@scd.hp.com (Richard Karlquist) writes:
>In article <1993Nov15.164550.18931@cs.rit.edu>,
>Albert T Davis <atd@cs.rit.edu> wrote:
>>
>>This is why they abandoned the phasing method back in the days of tubes.
>>It was all true then. It was difficult to get even 20 db or so of
>>carrier and alt sideband suppression. Even discrete transistor circuits
>>are probably not good enough here. How much carrier suppression is
>>required? It seems to me that today's IC's should be able to do it.
>
>Regarding IC's as balanced modulators: "today's" IC's (i.e. MPY600)
>are not necessarily any better than 1970's IC's (i.e. MC1496) in terms
>of balance. They just run at higher frequencies. Probably the best
>that can be hoped for is internally trimmed IC's. This is better than
>a 1496 w/o external trimming, but not as good as an externally tweaked
>1496. The other problem with Gilbert cell IC's is that to get good
>IMD, you have to operate them at very low levels. This exascerbates
>the carrier suppression problem because the signal is small compared
>to the carrier. Since Gilbert cells have high noise levels, dynamic
>range is a big problem.

Of course there was a solution back in vacuum tube days. It was called
a 7360. This was a high level beam deflection mixer used in SSB transmitters.
The problem of getting a precise 90 degree phase shift across three octaves
of audio remained, however, with the B&W Mod 350 2Q4 network only good
for +/- 1.5 degrees across the bandpass. That only gave about 40 db of
opposite sideband rejection, but carrier suppression was easily 60 db.

Gary
--
Gary Coffman KE4ZV | If you wanna run cool, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | you gotta run on heavy,| uunet!rsiatl!ke4zv!gary
534 Shannon Way | heavy fuel. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -Mark Knoffler |

953. Need to simple circuit plan

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 17:52:36 UTC
From: lawrence@combdyn.com
Message-ID: <1993Nov17.175236.29421@combdyn.com>
Source record: 119186

I'm looking for plans that will allow me to couple two (or more) TNCs to
a single radio. Both of which will be running at the same time.

The speaker audio will be available to both TNCs.....and not necessary but
maybe a nice extra...to allow the other TNC to hear the output from the TNC
that currently keying the transmitter.

The main thing is a circuit so that only one of the mike/ptt pairs can key
the transmitter at a time. The other one should be blocked.

The radio at present is a Handheld radio, though the possibility exists that
some other radio (with separate PTT line) maybe used in the future.

--
--EMAIL----------------------------PHONE-----------FAX------------
| WORK: lawrence@combdyn.com | (403)529-2162 | (403)529-2516 | CallSign
| HOME: dreamer@lhaven.uumh.ab.ca | (403)526-6019 | (403)529-5102 | VE6LKC
----
disclamer = (working_for && !representing) + (Combustion Dynamics Ltd.);

954. Re: Xtal filter help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 21:51:30 UTC
From: alanb@sr.hp.com
Message-ID: <CGnopu.L8F@srgenprp.sr.hp.com>
Source record: 119170
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

John Welch (jjw@seastar.org) wrote:

: I've been working on a home-built xtal filter, and have got it
: working. However, I'm trying to figure out how to match its input &
: output to the other stages.

: I have made a simple bridge circuit, and it appears that the
: resonant impedance is about 150 ohms. Is this the impedance I need to
: match to? If not, how do I find the right impedance?

The desired load impedance is the one that gives the least passband
ripple and insertion loss. With a 50-ohm source (signal generator)
and 50 ohm load (receiver, scope, network analyzer, etc) solder a
potentiometer (say, 500 ohms) between source and filter and filter
and load. Adjust the pots (always the same resistance for each)
for a nice filter "shape."

AL N1AL

955. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 21:54:51 UTC
From: alanb@sr.hp.com
Message-ID: <CGnovG.LC5@srgenprp.sr.hp.com>
Source record: 119171

Albert T Davis (atd@cs.rit.edu) wrote:

: I have been out of this for a while....

: Is the filter method still the most common for SSB generation?
: Why?

: It seems to me that the phasing method is far superior with today's technology.

The phasing method works fine for transmitting, but does not have good enough unwanted-sideband rejection for receiving. Since mosts radios these days are transceivers, and you need the crystal filter anyway for receiving, you might as well use it for transmiting as well.

AL N1AL

956. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 21:57:12 UTC
From: alanb@sr.hp.com
Message-ID: <CGnozD.LG3@srgenprp.sr.hp.com>
Source record: 119172

Richard Karlquist (rkarlqu@scd.hp.com) wrote:

: >Why buy a phase shifter for RF?
: >...just use a 1/4 wave piece of transmission line after the power divider...
: >

: The 1/4 wave line gets kinda long on 1750m!

Also the 1/4 wave line only works on one narrow range of frequencies.

AL N1AL

957. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-17 23:10:42 UTC
From: faunt@netcom2.netcom.com
Message-ID: <FAUNT.93Nov17151042@netcom2.netcom.com>
Source record: 119175

My wife's mother's husband, who runs the collection of "clocks" that is the working US standard says that WWV gets their time by GPS receiver these days.

His clocks at the NIST in Boulder are across the hall from the atomic clock that is the primary standard, and run all the time. They are calibrated by the atomic standard, when it runs, which is relatively seldom.
73, doug

958. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 00:15:09 UTC
From: decarlis@mtu.edu
Message-ID: <2ceeqd$o1p@maxwell21.ee>
Source record: 119173

Richard Karlquist (rkarlqu@scd.hp.com) wrote:
: In article <2cbvcd$m8q@maxwell21.ee>,
: Daniel E. Carlisle <decarlis@mtu.edu> wrote:
: >Galen Watts (galen@picea.CFNR.ColoState.EDU) wrote:

: >: (along with the companion R2) but I haven't built it, as I can't decide if
: >: I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
: >
: >: Galen, KF0YJ
: >

: >Why buy a phase shifter for RF?
: >...just use a 1/4 wave piece of transmission line after the power divider...
: >

: The 1/4 wave line gets kinda long on 1750m!
I meant for 440MHZ!
:wq

959. 10 Gig

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 00:39:46 UTC
From: gclarkii@NeoSoft.com
Message-ID: <CGnwIC.FwE@sugar.NeoSoft.COM>
Source record: 119174

Hi,

I picked up a couple of 10.525 alarm systems today and was wondering if anyone could give me some pointers on useing these for amateur bands.

Here is the info from each part:
1. New Japan Radio Co., Ltd. NJR4123D and below that B 4541A.
2. The other one is a Alpha (ai) with these two numbers stamped on it in ink. 306017 on the back and on the flange G0S2581-91.

Should I be able to use these to play around with on 10 Gig? Also, could someone give me some info on how these differ from the Gunplexers in the ARRL handbook.

thanks for any and all help

Gary --N5VMF--

--
Gary Clark II | FreeBSD 1.0 being run everywhere!
gclarkii@radon.gbdata.com |
gclarkii@netport.neosoft.com |
Mail info@radon.gbdata.com for information on FreeBSD support

960. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 04:11:17 UTC
From: jjw@seastar.org
Message-ID: <CGo6Au.AAn@seastar.org>
Source record: 119176

As quoted from <2cbvcd$m8q@maxwell21.ee> by decarlis@mtu.edu (Daniel E. Carlisle):
<stuff deleted>
> : In the April, 93 issue of QST is the 'Multimode Phasing Exciter' alias the
> : T2 board. Uses 1% componenets in the phase shift network. I have the board
> : (along with the companion R2) but I haven't built it, as I can't decide if
> : I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
> : phase shift for the RF, which I can get for 440 from Mini-Circuits.
>
> : Anybody built these boards and willing to talk?
>
> : Galen, KF0YJ
>
> Why buy a phase shifter for RF?
> ...just use a 1/4 wave piece of transmission line after the power divider...
>

Unless you use Teflon coax, the variation in velocity factor
from foot to foot makes it difficult to get exactly 90 degrees by
calculating the length in inches.
A 90 degree length of coax at 160M is rather long.
A 90 degree chunk of coax is only 90 degrees at one very
narrow range of frequencies.
Unless you have a *lot* of patience and time, it's far easier
to use a pre-built component that you already know works.
A 90 degree chunk of coax induces some loss, and thus some
amplitude imbalance.

I once seriously considered phasing using the Qualcom dual DDS
chip, setting the second DDS to be 90 degrees plus or minus from the
first, but differences in the DACs and filters induced too much
amplitude and phase shift for the sharp selectivity I wanted. I found
I could get what I wanted only if I also used a crystal filter too,
and at that point the expense of phasing became a drawback. I'd still
like to do it some day, though...
--
John Welch, N9JZW

961. Dave's Kits -- Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 13:45:50 UTC
From: prvalko@vela.acs.oakland.edu
Message-ID: <2cfuae$b7i@oak.oakland.edu>
Source record: 119177

Have any of you put togeter the "Dave's Kits" 20M QRP radio?

What do you thing/what have you heard?

wb8zjl =paul=

962. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 15:16:24 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov18.151624.4441@ke4zv.atl.ga.us>
Source record: 119178

In article <CGo6Au.AAn@seastar.org> jjw@seastar.org (John Welch) writes:
>> Why buy a phase shifter for RF?
>> ...just use a 1/4 wave piece of transmission line after the power divider...
>
> Unless you use Teflon coax, the variation in velocity factor
>from foot to foot makes it difficult to get exactly 90 degrees by
>calculating the length in inches.
> A 90 degree length of coax at 160M is rather long.
> A 90 degree chunk of coax is only 90 degrees at one very
>narrow range of frequencies.
> Unless you have a *lot* of patience and time, it's far easier
>to use a pre-built component that you already know works.
> A 90 degree chunk of coax induces some loss, and thus some
>amplitude imbalance.
>
> I once seriously considered phasing using the Qualcom dual DDS
>chip, setting the second DDS to be 90 degrees plus or minus from the
>first, but differences in the DACs and filters induced too much
>amplitude and phase shift for the sharp selectivity I wanted. I found
>I could get what I wanted only if I also used a crystal filter too,
>and at that point the expense of phasing became a drawback. I'd still
>like to do it some day, though...

There's a real simple way to get a 90 degree shift. Have your oscillator
drive a divide by four circuit arranged as one JK driving two other JKs,
one driven by Q and the other driven by not Q. You can take your quadrature
components from the latter pair of FFs. Of course your oscillator must
run at 4X the IF frequency, but that's not a problem. If you use HS parts
for the JKs, your quadrature outputs will be nearly ideal square waves
which is exactly what you want to drive diode ring mixers efficiently.

Getting that blankety blank audio phase shift to be exactly 90 degrees
at every frequency over a 3 octave range is still the hard part.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

963. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 16:57:13 UTC
From: dbraun@ilx049.intel.com
Message-ID: <2cg9h9$1qqf@ilx018.intel.com>
Source record: 119179

This has been a fascinating discussion! I have been reverse-engineering
an old H-P vector impedance meter without benefit of the manual,
and it does something very much like SSB generation.

In it there is a VFO that operates (in five bands) from 0.5 MHz
to 110 MHz. Its output goes directly to one of the probe connections,
as well as to an aluminum box of circuitry. The output of
this aluminum box includes another RF signal that is always
exactly 5 KHz higher than the VFO frequency. In this signal,
there is no detectable leak-through of the VFO freq. or the VFO
freq minus 5 KHz. (There is a 5 KHz audio oscillator circuit in the system.)

So: the question is: What kind of circuit will take a RF signal
anywhere between .5 MHz and 110 MHz, and generate a signal exactly 5KHz
higher, with excellent spurious rejection? It sounds like the SSB
"phasing" technique, but with a single fixed audio frequency instead
of a speech waveform. This would make the audio phase shifter trivial,
but because of the variable RF freq, the RF phase shifter would be
(IMHO) very hard to implement! The number of components in the
aluminum box is suprisingly small.

Any insight?
--

Doug Braun Intel Israel, Ltd. M/S: IDC1-41
Tel: 011-972-4-655069 dbraun@inside.intel.com

964. Re: Opto-isolator keying

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 17:52:27 UTC
From: c2xjcb@kocrsv01.delcoelect.com
Message-ID: <1993Nov18.175227.15963@kocrsv01.delcoelect.com>
Source record: 119180

In article <40010004@opus.hpl.hp.com>, walker@opus.hpl.hp.com (Rick Walker) writes:
> In rec.radio.amateur.homebrew, jennings@eng115.rochny.USpra.abb.COM (Tom_Jennings) writes:
>
> >
> > My friend is building a keyer circuit using the Curtis Keyer chiip.
> > He is trying to reduce the size and power cnsumption so he
> > would like to use an opto isolator instead of a relay
> > or transistor type circit for the output stage. His rig is a
> > Kenwood TS-140S. He is interested in circuits which use
> > opto-isolators to key transmitters and use little current.
> > Any suggestions or references?
>
> Use a power fet (like a VN10KM). Zero dissipation on the gate side, and you
> can easily find parts to handle 100V and 1A. Should be fairly bomb-proof.
> If you use an enhancement fet, you can switch directly off the TTL level
> output.
>
> --
> Rick

TS-140 is a solid-state rig, and therefore doesn't have high voltage
on the key input; I've got a TS-140, and made an interface to my PC
which used an 2N2222 (2N3904, 2N4401, etc.) cheap and dirty NPN
transistor. Signal from keyer to base thru resistor, resistor from
base to ground (equal values will set "on" threshold to about 1.5V,
2:1 ratio will make about 2.1V, good for TTL-type feed). Emitter
of course goes to ground, collector to "key" input.

You might also try a FET like the IRF530, IRF520, etc. (needs about
7V of Vgs to get turned on hard), or an IRLZ024 "logic level" FET
(Vgs(th) is about 2-3V, good for TTL and 5V CMOS). I'd feed gate
thru a 1K resistor and a .001uF cap from Gate to Source; this should
prevent any inadvertant oscillation that the FETs are prone to.
--
James C. Bach Ph: (317)-451-0455 The views & opinions expressed
Advanced Project Engr. GM-NET: 8-322-0455 herein are mine alone, and are
Powertrain Strategy Grp Amateur Radio: WY9F NOT endorsed, sponsored, nor
Delco Electronics Corp. Just say NO to UNIX! encouraged by DE or GM.

965. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-18 19:01:23 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov18.190123.71176@yuma.ACNS.ColoState.EDU>
Source record: 119181

>In article <CGo6Au.AAn@seastar.org> jjw@seastar.org (John Welch) writes:
>>> Why buy a phase shifter for RF?
>>> ...just use a 1/4 wave piece of transmission line after the power divider...
>> Unless you use Teflon coax, the variation in velocity factor
>>from foot to foot makes it difficult to get exactly 90 degrees by
>>calculating the length in inches.

Actually, what I've decided to do is run the T2 board at a fixed freq
(around 400 MHz) and using a DDS board to get VFO and mixing that in
farther down the chain. The transmission line idea will work, since I
only have to tune it once, and it'll stay on that frequency, amen.

I'm impressed at the number of positive comments on this subject.

Galen, KF0YJ

966. Re: single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 00:39:49 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2ch4kl$kua@hpscit.sc.hp.com>
Source record: 119182

In article <2cg9h9$1qqf@ilx018.intel.com>,
Doug Braun <dbraun@iil.intel.com> wrote:
>This has been a fascinating discussion! I have been reverse-engineering
>an old H-P vector impedance meter without benefit of the manual,
>and it does something very much like SSB generation.
>
>So: the question is: What kind of circuit will take a RF signal
>anywhere between .5 MHz and 110 MHz, and generate a signal exactly 5KHz
>higher, with excellent spurious rejection? It sounds like the SSB
>"phasing" technique, but with a single fixed audio frequency instead

No phasing techniques here. It's just a .5 to 1 MHz. VCO with an
offset phase locked loop. If this loop goes out of lock, the
"SEARCHING" light on the front panel lights up. On ranges above .5 to 1
MHz., harmonics of the VCO are used. This technique would be useless
for generating SSB voice signals.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

>Doug Braun Intel Israel, Ltd. M/S: IDC1-41
> Tel: 011-972-4-655069 dbraun@inside.intel.com

967. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 02:29:54 UTC
From: zlau@arrl.org
Message-ID: <2626@arrl.org>
Source record: 119183

In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>
>There's a real simple way to get a 90 degree shift. Have your oscillator
>drive a divide by four circuit arranged as one JK driving two other JKs,
>one driven by Q and the other driven by not Q. You can take your quadrature
>components from the latter pair of FFs. Of course your oscillator must
>run at 4X the IF frequency, but that's not a problem. If you use HS parts
>for the JKs, your quadrature outputs will be nearly ideal square waves
>which is exactly what you want to drive diode ring mixers efficiently.

I tried flip flops with a 160 meter phasing receiver many years ago.
It sort of worked, but after doing some calculations, realized that
you need really *fast* flip flops to get an accurate 90 degree
phase shift. It probably isn't a problem at 160 kHz with fast logic
devices, though. On 440 MHz, good luck...
>
>Getting that blankety blank audio phase shift to be exactly 90 degrees
>at every frequency over a 3 octave range is still the hard part.

My perspective on this is different. With computer modeling, I think
you can get an extremely good idea what the phase shift will be at
audio frequencies. Thus, I had no difficulty modeling my circuit and
building something that closely approximated my model. Figuring out
the expected error isn't too difficult, either. On the other hand,
try and calculate the expected amplitude error through the mixer and
amplifiers vs. frequency.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: looking for state
#9 on 10 GHz
US Mail: c/o ARRL Lab
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet....
Phone (if you really have to): 203-666-1541

968. Police BBS

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 10:57:12 UTC
From: kevincur@netcom.com
Message-ID: <kevincurCGqJrC.G3G@netcom.com>
Source record: 119184
Cross-posted to: uk.radio.amateur,rec.radio.amateur.homebrew,rec.radio.amateur.equipment

��:
� :
� Large selection of file areas...Crime Prevention Information, �
� Ham Radio, Law Enforcement and General Software. Many Door �
� areas are available-Try them--they are entertaining & Fun!! �
� C.O.P.S BBS is available 24 hours a day, 7-days a week. �
� 8-N-1 supports up to 14.4 baud rate. :
� Thousands of CD-ROM files on-line!!! �
� �
� Check It Out TODAY! ! ! �
� �
� C.O.P.S. B B S �
� San Jose, CA �
� U.S.A �
� (408) 996-7790 �
� �
:��:

Tell them Kevin sent you!!
--

Kevin Curry
P.O. Box 7083 The night prowler strikes again!
Fremont, CA 94537-7083
E-Mail - kevincur@netcom.com

Never insult seven men, when all you're packin' is a six gun - Zane Gray

969. single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 13:48:24 UTC
From: mdennehy@unix2.tcd.ie
Message-ID: <mdennehy.753716904@unix2.tcd.ie>
Source record: 119185

Newbie Question Time :
Why bother to eliminate the offending sideband in the
transmitter at all ?

If the RX is good, It shouldn't be confused when you tell it to listen
to an ssb signal and then tune it to a DSB one, should it ?
Or is the idea of transmitting DSBSC not a good one (ie. wastes EM
bandwidth) ?
Hiding behind my newbie status to avoid great big red flaming followups,
EI5EDB.

--
Mark "Rain Man" Dennehy, Ham Radio : EI5EDB (2m FM only) :-(
J.F. Engineering Undergrad, Internet : Mdennehy@Unix2.tcd.ie
Trinity College Dublin. Telepathy : Mdennehy@Mars.Red.Planet

970. single sideband

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 15:24:46 UTC
From: jangus@skyld.tele.com
Message-ID: <753722686snx@skyld.tele.com>
Source record: 119192

In article <1993Nov17.084428.27117@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us writes:

> Of course there was a solution back in vacuum tube days. It was called
> a 7360. This was a high level beam deflection mixer used in SSB transmitters.
> The problem of getting a precise 90 degree phase shift across three octaves
> of audio remained, however, with the B&W Mod 350 2Q4 network only good
> for +/- 1.5 degrees across the bandpass. That only gave about 40 db of
> opposite sideband rejection, but carrier suppression was easily 60 db.

Yup, and the Gonset GSB-100 was a classic adaptation of this. Complete with
a surplused Command set (ARC-5) Transmitter VFO for the main tuning. It was
with one of these transmitters I found out how long an RF burn takes to heal.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

971. receive antenna switching

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 17:26:59 UTC
From: steve@hicomb.hi.com
Message-ID: <steve-191193121546@brainiac.hi.com>
Source record: 119187

I'm trying to build a two-position receive-only antenna switch. Currently, I'm using a KUP-style DPDT relay to switch between the two inputs. The unselected input is terminated with a 51 ohm metal-film resistor. Lead lengths are reasonably short. However, I seem to get only about 30-40 dB isolation from the unselected input. 'd like to get at least 60 dB isolation. Anyone have any suggestions on improving the situation?

Thanks,
-Steve

Steve Byan internet: steve@hicomb.hi.com
Hitachi Computer Products (America), Inc.
1601 Trapelo Road phone: (617) 890-0444
Waltham, MA 02154 FAX: (617) 890-4998

972. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 19:54:34 UTC
From: alanb@sr.hp.com
Message-ID: <CGr8My.8n2@srgenprp.sr.hp.com>
Source record: 119188

Mark 'Rain Man' Dennehy (mdennehy@unix2.tcd.ie) wrote:
: Newbie Question Time :
: Why bother to eliminate the offending sideband in the
: transmitter at all ?

: If the RX is good, It shouldn't be confused when you tell it to listen
: to an ssb signal and then tune it to a DSB one, should it ?
: Or is the idea of transmitting DSBSC not a good one (ie. wastes EM
: bandwidth) ?

DSB suppressed carrier is a perfectly viable method that is indeed
compatible with SSB receivers. There are two main problems:

1) It requires twice the average power and 4 times the peak power to
get the same power in a sideband. Since most PA stages are peak-power
limited, you effectively lose 6 dB (4x) when received on an SSB receiver.

2) It takes up twice the bandwidth, causing unnecessary interference.

Both of the above reasons become less important if you are running QRP
(low power). Also, QRP rigs tend to be smaller and simpler, so the
relative simplicity of a DSB rig may be the deciding factor.

AL N1AL

973. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 20:28:08 UTC
From: trier@slc6.ins.cwru.edu
Message-ID: <2cja8o$ffc@usenet.INS.CWRU.Edu>
Source record: 119189

In article <CGr8My.8n2@srgenprp.sr.hp.com>, Alan Bloom <alanb@sr.hp.com> wrote:
>DSB suppressed carrier is a perfectly viable method that is indeed
>compatible with SSB receivers. There are two main problems:

My understanding (from book larnin', not experience) is that there's an
additional problem: DSBSC didn't work well with direct-conversion SSB
receivers. Apparently that it is hard to tune the receiver because it
will pick up both sidebands. Unless tuned very precisely, the two
signals will tend to interfere and cause hard-to-understand output.

Is this correct? How much of a problem is it in reality?

Stephen

--
Stephen Trier KB8PWA "The light at the end of the tunnel
Work: trier@ins.cwru.edu may be an oncoming dragon"
Home: sct@po.cwru.edu - Unknown

974. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 20:52:00 UTC
From: mdennehy@unix2.tcd.ie
Message-ID: <mdennehy.753742320@unix2.tcd.ie>
Source record: 119190

In <CGr8My.8n2@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:

>: Why bother to eliminate the offending sideband in the
>: transmitter at all ?

>: If the RX is good, It shouldn't be confused when you tell it to listen
>: to an ssb signal and then tune it to a DSB one, should it ?
>: Or is the idea of transmitting DSBSC not a good one (ie. wastes EM
>: bandwidth) ?

I should really have stated here that I was thinking along the lines of
QRP operation, where, as has already been pointed out, the reduced
complexity can be a useful trade-off. That'll teach me to type clearly!
:-)

Blue Skies ...
Mark.
--
Mark "Rain Man" Dennehy, Ham Radio : EI5EDB (2m FM only) :-(
Engineering Undergrad, Internet : Mdennehy@Unix2.tcd.ie
Trinity College Dublin. Telepathy : Mdennehy@Mars.Red.Planet

975. Yes, someone has built a T2 and R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-19 21:04:41 UTC
From: wade@n1bwt.enet.dec.com
Message-ID: <2cjcd9$gp0@nntpd.lkg.dec.com>
Source record: 119191

>Article 1121 of rec.radio.amateur.homebrew:
>Newsgroups: rec.radio.amateur.homebrew
>From: galen@picea.CFNR.ColoState.EDU (Galen Watts)
>Subject: Re: single sideband, phasing and T2/R2
>
>In the April, 93 issue of QST is the 'Multimode Phasing Exciter' alias the
>T2 board. Uses 1% componenets in the phase shift network. I have the board
>(along with the companion R2) but I haven't built it, as I can't decide if
>I should put it on 440 SSB or 1750m CW/SSB. You must also have a 90 deg.
>phase shift for the RF, which I can get for 440 from Mini-Circuits.
>
>Anybody built these boards and willing to talk?
>
>Galen, KF0YJ

Yes. After hearing Rick Campbell describe these rigs at Microwave
Update '92, we decided to try them. (We are N1EKV, KB1VC, and myself).
By the time the boards actually arrived, we had thought about this for
awhile and discovered some potential improvements, particularly to the
R2, so we decided to assemble two pairs, one to try modifications and one
original design for comparison. Due to a few other activities, like
other ham interests, working for a living, and trying to stay married,
we aren't finished yet, but here is where we are:

T2 - works pretty well. At 50 MHz with a decent 90 degree phase shift
network, I measure 55 dB of carrier suppression, and better sideband
rejection than my spectrum analyzer can measure (spectrum analyzers don't
have steep-skirted filters so they can sweep at a reasonable speed). Two
areas need improvement:

1. The 90 degree phase shift networks in the article don't work very
well. A quarter-wave of coax is good at one frequency, but too big
at LF and too critical at UHF. Fast flip-flops seem attractive,
but, as KH6CP has already pointed out, when you do the numbers, they
aren't good enough at any reasonable frequency.

However, ferrites can do it. N1EKV came up with something called
a twisted-wire quadrature hybrid using a ferrite core and a
capacitor or two. I made examples for 7 Mhz and 50 MHZ - both are
within 1 degree of 90 over nearly an octave. Byron also shows an
op-amp circuit which can trim both amplitude and phase.
(Reference: Byron Blanchard, N1EKV, "RF Phase Shifter for
Phasing-Type SSB Rigs," _Proceedingsof the 19th Eastern VHF/UHF
Conference_, ARRL, 1993).

The audio phase shifter is pretty good. One of the references in the QST article does a pretty thorough tolerance analysis which concludes that 30 dB of sideband suppression is easy, 40 dB is realizable, and 50 dB is hard.

2. The output low pass filter values suggested are for a Butterworth filter with cutoff at the operating frequency, so they have 3dB of loss. Look up Tchebychev filters in the ARRL handbook - you can get better harmonic rejection with minimal loss.

The R2 has much more potential for enhancement. The original works quite well, though I don't have accurate numbers. Sideband rejection might be 35 or 40 dB by rough measurement, but, to the ear, that is a lot when there is no AGC trying to counteract the filter as you tune. Areas for improvement, still under investigation:

1. Phase shifter - like T2, plus add op-amp trimmer to improve rejection.

2. High level mixers - burn some power in the local oscillator for increased dynamic range.

3. Audio preamp - currently a common-base transistor, distorts before either the mixer or the op-amps. A very low noise op amp sells for around $5, should do a much better job and provide a better impedance for the triplexer or diplexer.

4. Triplexer - input to the audio phase shifter must be band-limited, since the phase shift is only good over a limited range. At the same time, the mixer needs a good load from DC to several times the RF frequency. We think this can be simplified to a diplexer if the audio preamp has controlled input impedance down to DC. The diplexer should have less phase distortion.

5. AGC - while we agree with Rick that AGC is terrible if one wants low distortion, the idea of a completely linear receiver with a one-watt or more audio amp driving headphones is frightening! Something to protect the ears is needed.

Teasers:
1. Is it possible for hams to make a synthesizer with low enough phase noise to use with the T2 and R2?

2. If the R2 uses a diplexer which is good down to DC, it is possible to recover both amplitude and phase of an incoming carrier. Much more than just a receiver.

paul N1BWT

976. Re: Dave's Kits -- Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-20 13:36:22 UTC
From: esj@harvee.billerica.ma.us
Message-ID: <H.eg.dxLGSaGy9PU@harvee.billerica.ma.us>
Source record: 119193

In <2cfuae$b7i@oak.oakland.edu>, prvalko writes:
>
>Have any of you put togeter the "Dave's Kits" 20M QRP radio?
>
>What do you thing/what have you heard?

in real life(tm) its dan's small parts and kits. dave benson (nn1g)
designed the radio.

it is a 1.5w qrp tranciever. the rx is a superhet with a xtal filter.
it sounds real nice. I'm building an 80m version and you can get it for
40m also. it is not a simple kit. you get 4 bags of parts, you get to
wind toroids, hack up xformers, redrill holes in the pc board and every
so often, figure out which is right, the pcb or the schematic :-) then
you get to tune it.... yee-haa!

I am not being sarcastic when I say that I am truly having a ton of fun
putting this kit together! if you are feeling intimadated by a kit of
this complexity, wait a few months for the next qrp-ne club project. I
can't say much about it yet, but it promises to be neat! at the very
least, it will be cw but I'm pushing for qrp amtor capability either
built in or as a hack-on...

--- eric

--
HOME: esj@harvee.billerica.ma.us HAM ka1eec
WORK: 617.630.4687 (w) esj@ruby.polaroid.com
source of the public's fear of the unknown since 1956

977. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-20 17:48:43 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov20.174843.13453@ke4zv.atl.ga.us>
Source record: 119194

In article <CGr8My.8n2@srgenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:
>Mark 'Rain Man' Dennehy (mdennehy@unix2.tcd.ie) wrote:
>: Newbie Question Time :
>: Why bother to eliminate the offending sideband in the
>: transmitter at all ?
>
>DSB suppressed carrier is a perfectly viable method that is indeed
>compatible with SSB receivers. There are two main problems:
>
>1) It requires twice the average power and 4 times the peak power to
>get the same power in a sideband. Since most PA stages are peak-power
>limited, you effectively lose 6 dB (4x) when received on an SSB receiver.
>
>2) It takes up twice the bandwidth, causing unnecessary interference.
>
>Both of the above reasons become less important if you are running QRP
>(low power). Also, QRP rigs tend to be smaller and simpler, so the
>relative simplicity of a DSB rig may be the deciding factor.

All very true. However, if you're willing to complicate the receiver,
you can use synchronous detection. This recovers the signal that would
otherwise be discarded by using SSB reception. And, it can be setup to
reject non-correlated signals in one of the sideband bandpasses, IE you
get correlation gain for the DSB components, but not for interference
and noise which aren't correlated in the two channels. You have to use
a fairly fancy common mode correlator circuit to do this.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

978. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-20 18:00:28 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov20.180028.13578@ke4zv.atl.ga.us>
Source record: 119195

In article <2cja8o$ffc@usenet.INS.CWRU.Edu> trier@slc6.ins.cwru.edu (Stephen C. Trier) writes:
>
>My understanding (from book larnin', not experience) is that there's an
>additional problem: DSBSC didn't work well with direct-conversion SSB
>receivers. Apparently that it is hard to tune the receiver because it
>will pick up both sidebands. Unless tuned very precisely, the two
>signals will tend to interfere and cause hard-to-understand output.
>
>Is this correct? How much of a problem is it in reality?

It's a problem. It's worse than receiving AM with a SSB receiver.
With no carrier to zero beat as a tuning aid, and with both sidebands
present in the recovered audio, if your tuning is only slightly off,
the two sidebands will have different phases and interfere in strange
ways. If the tuning is further off, you hear two copies of the audio
shifted in pitch from each other.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

979. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-20 23:23:04 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2cm8so$94p@hpscit.sc.hp.com>
Source record: 119196

In article <1993Nov20.174843.13453@ke4zv.atl.ga.us>,
Gary Coffman <gary@ke4zv.atl.ga.us> wrote:

>>relative simplicity of a DSB rig may be the deciding factor.
>
>All very true. However, if you're willing to complicate the receiver,
>you can use synchronous detection. This recovers the signal that would
>otherwise be discarded by using SSB reception. And, it can be setup to
>reject non-correlated signals in one of the sideband bandpasses, IE you
>get correlation gain for the DSB components, but not for interference
>and noise which aren't correlated in the two channels. You have to use
>a fairly fancy common mode correlator circuit to do this.

DSB reception of DSB signals utilizing both sidebands is just as power
efficient as SSB reception of SSB signals on an *average power* basis.
However, the PEP to average ratio is 4 to 1 for DSB and only 2 to 1
for SSB (as pointed out earlier by Alan Bloom). Since both the FCC
and transmitter technology tend to be peak power limited rather than
average, DSB effectively has a 3 dB. disadvantage even if you receive
both sidebands coherently.

The non-correlation of interference is only worth 3 dB.

And of course none of this works unless you transmit a pilot carrier
or pilot tone to get exact carrier recovery, as you pointed out.
For continuous signals like video and data, you can get around that
by the usual frequency doubler carrier recovery trick.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

980. Re: Lo-Fer, Med-Fer, Hi-Fer (have questions, need elmer)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-21 00:51:09 UTC
From: rvt@susie.sbc.com
Message-ID: <2cme1t$31n@sbctri.sbc.com>
Source record: 119197

In article <CGKH73.1u7@fms.com> andrews@fms.com (Andrew Sargent N8OFS) writes:
>
>Hello all,
>
>Could somebody send me the tech info on the 'Fers' and the rules
>and reg's???
>
>Better yet, start a new thread...
>
A good start is to subscribe to "The Lowdown" which is a
publication of the Longwave Club of America. This is
usually a 30 or so page monthly publication listing
current beacons on 160-190 kHz and in the MF or "Medfer"
range around the broadcast band.

Subscriptions are $18.00 and available from:

The Longwave Club of America
45 Wildflower Road
Levittown, PA 19057

Another source is "the low and medium frequency
radio scrapbook" published by Ken Cornell, W2IMB.

Ken Cornell, W2IMB
225 Baltimore Ave.
Point Pleasant Beach, NJ 08742

(I know, yuck, New Jersey! I use to live near there...)

Cornell's book is about 100 pages of schematics and
info on low and medium frequency operation.

I started listening on 160-190 kHz last winter and find
reception of the 1 Watt beacons to be as difficult as
weak signal vhf. It's a real challenge and a lot of
fun.

I built a 10 MHz local oscillator driving a ZAD-6
Mini-Circuits DBM to use my old FT-101B on 10 MHz
as the basic receiver. The antenna I've had most success
with is a 4 foot diagonal 50 turn loop with a coupling
loop matched to 50 ohms at 185 kHz. I used a bipolar
low-Z amp between the antenna and rf port on the mixer.
In the basement, I've heard a beacon in Indiana, about
200 miles away in good conditions.

I had little success with active antennas at frequencies
above 100 kHz, but they worked fine at 60 kHz and lower.
Random long wire antennas have never worked for me.

--
Roger V. Thompson, P.E. |ARS AD5T
Southwestern Bell Technology Resources, Inc. |314-529-7847 (Office)
550 Maryville Centre Dr. |314-529-7674 (Fax)
St. Louis, MO 63141 |rvt@calvin.sbc.com

981. Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-21 14:29:30 UTC
From: wa2sff@cbnewsh.cb.att.com
Message-ID: <CGuIx7.1LE@cbnewsh.cb.att.com>
Source record: 119198

I am getting active on 1270 satellites and I need an amplifier
to raise the 10 Watts of my rig upto about 100 watts.
Are there any good articles or kits for 2c39 amplifiers?

The one the in arrl handbook needs a small machine shop to
build. Does anyone make kits?

Any help would be appreciated.

Joe Wilkes
att!arch4!wa2sff

982. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-21 23:16:20 UTC
From: glenne@sad.hp.com
Message-ID: <CGv7B8.ALB@srgenprp.sr.hp.com>
Source record: 119199

joseph.e.wilkes (wa2sff@cbnewsh.cb.att.com) wrote:
: I am getting active on 1270 satellites and I need an amplifier
: to raise the 10 Watts of my rig upto about 100 watts.
: Are there any good articles or kits for 2c39 amplifiers?

: The one the in arrl handbook needs a small machine shop to
: build. Does anyone make kits?

: Any help would be appreciated.

Try the Mitsubishi M57762 modules available from RF Parts.
They will maround 20 watts linear and almost 30 watts saturated
with under one watt drive. A suitable driver is also available.

Glenn Elmore n6gn

ax.25 n6gn@wx3k.#nocal.ca.usa.na
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

983. schematic for audio T pad?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 04:32:05 UTC
From: mac@cis.ksu.edu
Message-ID: <mac.753942730@depot.cis.ksu.edu.cis.ksu.edu>
Source record: 119200
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

Can anyone please show me the schematic of a "T pad" for remote-
control. I know that a T pad uses at least two variable pots
and probably keeps the input impedance relatively constant, but
I haven't been able to re-invent the circuit by diddling around.

```
--------/\/\/\/\/\/\--------
^
input | output

--------/\/\/\/\/\/\--------
^
|
```

--Myron.
--
We preserve our freedoms using four boxes: soap, ballot, jury, and cartridge.
Myron A. Calhoun, PhD EE; Assoc. Professor (913) 539-4448 home
INTERNET: mac@cis.ksu.edu 532-6350 work, 532-7353 fax
UUCP: ...rutgers!depot!mac Packet radio: W0PBV@N0ARY.#NOCAL.CA.USA.NA

984. [Q] transistor info for OC83B

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 10:32:32 UTC
From: kyt@fiveg.icl.co.uk
Message-ID: <CGw2M8.B0r@oasis.icl.co.uk>
Source record: 119201

Hello world, Sorry if this is the wrong place for this posting.

I am looking for a spec sheet for a 1960's germanium transistor made by Mullards of type OC83B. It forms part of the circuit for a tachometer in a Smiths instrument.

Many thanks in advance... regards Kai Tsang

985. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 15:44:19 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov22.154419.23109@ke4zv.atl.ga.us>
Source record: 119204

In article <CGuIx7.1LE@cbnewsh.cb.att.com> wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>I am getting active on 1270 satellites and I need an amplifier
>to raise the 10 Watts of my rig upto about 100 watts.
>Are there any good articles or kits for 2c39 amplifiers?
>
>The one the in arrl handbook needs a small machine shop to
>build. Does anyone make kits?

There's a nice German made RF deck sold by the SSB Electronics folks that uses a pair of 3CX100A5 tubes to give 250 watts SSB, more if you fit the tubes with the optional water cooling jackets. I have one, it works fine. Cost's $750 with 2 new tubes installed. Chip Angle used to market a similar amp under the Angle Linear name. I don't know if it's still available. The filament and blower supplies are included in the SSB unit, but you have to supply the HV power supply, about 1000-1400 volts at a few hundred mils.

Or you can take the modern approach and use Wilkinson power combiners and a bunch of the 20 watt Mitsubishi solid state bricks. That get's expensive fairly fast though, say 12 modules for a 240 watt amp, and you need a hefty low voltage supply, and insurance that you always have a good termination impedance and lightning protection.

Then there's surplus. I bought a nice 2 tube RF deck at Dayton for $50 that looks like it came out of a military avionics suite. And of course there's the old APX-6. You can build your own, the RSGB books have a design, and the German UHF Compendium has a couple more, that are feasible to build at home with hand tools. Having a lathe would make it easy, of course, but there are designs that can do without one by using nibblers and files, or you can farm that part out to a job shop. You can get by with the Kool Amp silver plating kit, or you can farm that part out to a plating shop too. I do my own machine work, I do have a machine shop, but I send my plating work out, nasty chemicals.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

986. Re: single sideband, phasing and T2/R2

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 16:03:58 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov22.160358.23255@ke4zv.atl.ga.us>
Source record: 119206

In article <2626@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>>
>>There's a real simple way to get a 90 degree shift. Have your oscillator
>>drive a divide by four circuit arranged as one JK driving two other JKs,
>>one driven by Q and the other driven by not Q. You can take your quadrature
>>components from the latter pair of FFs. Of course your oscillator must
>>run at 4X the IF frequency, but that's not a problem. If you use HS parts
>>for the JKs, your quadrature outputs will be nearly ideal square waves
>>which is exactly what you want to drive diode ring mixers efficiently.
>
>I tried flip flops with a 160 meter phasing receiver many years ago.
>It sort of worked, but after doing some calculations, realized that
>you need really *fast* flip flops to get an accurate 90 degree
>phase shift. It probably isn't a problem at 160 kHz with fast logic
>devices, though. On 440 MHz, good luck...

Well sure. :-) If you want to do on channel phasing at UHF, you need
GAS parts, or do it the old fashioned way with a trombone section.
However, good HS parts, or in a pinch ECL parts, will suffice for any
HF band.

>>Getting that blankety blank audio phase shift to be exactly 90 degrees
>>at every frequency over a 3 octave range is still the hard part.
>
>My perspective on this is different. With computer modeling, I think
>you can get an extremely good idea what the phase shift will be at
>audio frequencies. Thus, I had no difficulty modeling my circuit and
>building something that closely approximated my model. Figuring out
>the expected error isn't too difficult, either. On the other hand,
>try and calculate the expected amplitude error through the mixer and
>amplifiers vs. frequency.

Well if you use good diode ring mixers, hard clamped by the driving
square waves, the amplitude error should be tiny. I've used SBL-1s
successfully this way. You shouldn't introduce amplifiers in the
phasing section. However, we need phase errors much less than 1 degree
at each frequency over the audio bandpass to get decent sideband
cancellation, and I haven't been able to do that because the sharp dt
errors introduced between harmonies make the audio sound cruddy, IE there's
a differential time delay that's frequency dependent in the audio phasing
networks that screws up the relationships among the audio components. The
voice winds up sounding dissonant. If the audio is going to sound bad at
high opposite sideband suppression ratios, I'd rather use the filter method.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

987. W7EL Optimized QRP: VFO Problem

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 16:06:35 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <2cqo2b$130@news.acns.nwu.edu>
Source record: 119203

I am building W7EL's ``Optimized'' QRP rig described in Aug 1980 QST,
Nov 1980 QST and the 1993 ARRL Handbook. The VFO output (measured on
a scope) is only 0.25V pp whereas it should be about 5v pp.

The VFO is a Hartley oscillator with a 2N4416 N-JFET. I modified the
design from 40m to 20m by halving the inductance and capacitance in
the tuned circuit. The VFO oscillates readily and is quite stable.
The range is from 14.0000 to 14.145MHz. My only problem is the amplitude.
The one other change I made is that I replaced the 2.7pf series capacitor
in the gate with a 2pf one. I figured that with a doubling of frequency,
this should be fine. Lastly, I am using an NTE equivalent of the 2N4416.
The specs were on the wrapper and they seem to match the specs of 4416.

Any suggestions??

I am thinking about increasing the gate series capacitor. If that
does not work, then replacing the FET. As a last resort, add a 13db
gain block.

Rajiv
aa9ch
r-dewan@nwu.edu

988. Tandem Match from ARRL Handbook: blowing op amps

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 16:17:26 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <2cqomm$193@news.acns.nwu.edu>
Source record: 119202

I have been working on the Tandem Match Computing Power/SWR meter
as described in the Handbook and the mods in the Tech. Correspondence
section of July 1993 QST. I am having a minor problem. One TLC27
has blown an another is getting awfully warm. These darn ICs are
hard to find.

I built the unit using the circuit board from FAR circuits. I checked
it before installing it in a box and it seemed fine. I installed it
and it did not work. There was no V+ voltage. The last pass transistor
in the supply (2N2222A) had blown. Before replacing it, I checked the
board. The V+ to V- resistance was 15 ohms. Fishy. I checked the board
(not in the box any more). No bridges, bent components etc. Finally
tracked it down to a TLC27M4 (quad FET input opamp) that had 15 ohm
resistance between pin 4 and 11 (V+ and V-) pins. This was U3 in the
circuit SWR computing circuit. I took it out and thought that I would
at least get the Power side working. As I was testing, I noticed that
I could not get 7.07 Volts as the step 3 in the calibration calls for
and that U1 was getting warm. (the +-2.5V supplies were ok).

Any suggestions?

For now I have put the project in the box till I find a TLC27M4.

Rajiv
aa9ch
r-dewan@nwu.edu

989. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 16:17:52 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov22.161752.23379@ke4zv.atl.ga.us>
Source record: 119205

In article <2cm8so$94p@hpscit.sc.hp.com> rkarlqu@scd.hp.com (Richard Karlquist) writes:
>In article <1993Nov20.174843.13453@ke4zv.atl.ga.us>,
>Gary Coffman <gary@ke4zv.atl.ga.us> wrote:
>>All very true. However, if you're willing to complicate the receiver,
>>you can use synchronous detection. This recovers the signal that would
>>otherwise be discarded by using SSB reception. And, it can be setup to
>>reject non-correlated signals in one of the sideband bandpasses, IE you
>>get correlation gain for the DSB components, but not for interference
>>and noise which aren't correlated in the two channels. You have to use
>>a fairly fancy common mode correlator circuit to do this.
>
>DSB reception of DSB signals utilizing both sidebands is just as power
>efficient as SSB reception of SSB signals on an *average power* basis.
>However, the PEP to average ratio is 4 to 1 for DSB and only 2 to 1
>for SSB (as pointed out earlier by Alan Bloom). Since both the FCC
>and transmitter technology tend to be peak power limited rather than
>average, DSB effectively has a 3 dB. disadvantage even if you receive
>both sidebands coherently.

Well that's only an issue if you're doing a high power transmitter.
At the QRP levels most homebrew DSB rigs run, it's a moot point.

>The non-correlation of interference is only worth 3 dB.

I've seen this argued back and forth. It's true if you're just using
a summer as a correlator. But more advanced correlators are possible.
In any event, that 3 db makes up for the lost 3 db PEP that might be
an issue at high transmitter power levels.

>And of course none of this works unless you transmit a pilot carrier
>or pilot tone to get exact carrier recovery, as you pointed out.
>For continuous signals like video and data, you can get around that
>by the usual frequency doubler carrier recovery trick.

I understand that the doubler technique can be used with voice too.
The time constant of the PLL has to be altered to a fast attack, slow
decay curve. This may introduce a bit of distortion at the beginning
of syllables if the attack timing is wrong.

The big drawback to DSB remains that it occupies twice the bandwidth
of SSB and thus can cause more interference, though at a lower level,
to adjacent stations.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary

Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

990. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 19:22:31 UTC
From: dfeldman@teal.csn.org
Message-ID: <CGwr5J.HzG@csn.org>
Source record: 119207

In article <1993Nov22.154419.23109@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>In article <CGuIx7.1LE@cbnewsh.cb.att.com> wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>>I am getting active on 1270 satellites and I need an amplifier
>
>There's a nice German made RF deck sold by the SSB Electronics folks
>that uses a pair of 3CX100A5 tubes to give 250 watts SSB, more if you
>fit the tubes with the optional water cooling jackets. I have one, it

Are you aware of any kw-class amps available (not surplus; designed for ham use)? Not for satellite -- interested for weak signal terrestrial...

991. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 20:16:09 UTC
From: paulf@Csli.Stanford.EDU
Message-ID: <1993Nov22.201609.17703@Csli.Stanford.EDU>
Source record: 119208

wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:

>I am getting active on 1270 satellites and I need an amplifier
>to raise the 10 Watts of my rig upto about 100 watts.

Most folks seem to do pretty well into AO-13 using 10w with medium gain yagis. If you're going for a better uplink, you might want to consider some of the newer optimized long boom L - Band yagis. As the the saying goes, aluminum tends to be cheaper than silicon...

--
-=Paul Flaherty, N9FZX | "Fighter pilots make movies. Bomber pilots make
->paulf@Stanford.EDU | history." -- Jake Grafton

992. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 20:49:23 UTC
From: zlau@arrl.org
Message-ID: <2639@arrl.org>
Source record: 119210

In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>In article <CGuIx7.1LE@cbnewsh.cb.att.com> wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>>I am getting active on 1270 satellites and I need an amplifier
>>to raise the 10 Watts of my rig upto about 100 watts.
>>Are there any good articles or kits for 2c39 amplifiers?
>>
>>The one the in arrl handbook needs a small machine shop to
>>build. Does anyone make kits?
>
>Or you can take the modern approach and use Wilkinson power combiners
>and a bunch of the 20 watt Mitsubishi solid state bricks. That get's
>expensive fairly fast though, say 12 modules for a 240 watt amp, and
>you need a hefty low voltage supply, and insurance that you always have
>a good termination impedance and lightning protection.

Anyone actually blow up these devices with a high SWR despite
good heat sinking? At rated power, they are usually designed to
withstand a 20:1 SWR, though this undoubtedly degrades if you are
running them at twice their rated power :-).

The worst case, assuming the hybrid doesn't fail, is a 3:1 SWR at
the bricks. Thus, I'm not sure why a good termination impedance
is needed. This is one of the advantage of using hybrids combiners.

Keep in mind that it is pretty easy to mount a solid state amp
at the antennas, while only a real *fanatic* would run a water
cooled tube amplifier at the top of a tower. Thus, you might
factor in the feedline loss to get a more realistic comparision.

I'd expect 200 ft of 7/8 inch Heliax or 100 ft of 1/2 inch
Hardline to have 3 dB of loss at 1.3 GHz. Thus, for many
people, 120 watts at the antennas is about the most you
could expect from a tube type amp.

BTW, If you live on a nice hill and run this much power
to even a single loop yagi, I'd expect the troposcatter
range to be several hundred miles. Thus, you might be
able to talk to someone 400 miles away, even when the
conditions are lousy..

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW

225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

993. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 21:04:35 UTC
From: kevin@TorreyPinesCA.ncr.com
Message-ID: <1993Nov22.210435.3253@TorreyPinesCA.ncr.com>
Source record: 119209

In article <FAUNT.93Nov17151042@netcom2.netcom.com> faunt@netcom2.netcom.com (Doug Faunt N6TQS 510-655-8604) writes:
>
>His clocks at the NIST in Boulder are across the hall from the atomic
>clock that is the primary standard, and run all the time. They are
>calibrated by the atomic standard, when it runs, which is relatively
>seldom.
>73, doug

Oh no! You mean the WWV clock I have heard for the last 20+ years aren't tied directly into the atomic standard? I'm shattered, having had this image in my head for all this time of some titanium-hulled device on a marble slab in a sealed vault to which WWV clock was attached. Funny how images like that, no matter how ludidrous, remain with us as long as there's no reality to displace them.

--

____
Kevin Sanders, KN6FQ | ___ |
kevin.sanders@torreypinesca.ncr.com |o o _/ o o| Try Boatanchors
kevin%beacons@cyber.net |o o @ o o| For A Real Lift
|__________|

994. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 21:40:24 UTC
From: zlau@arrl.org
Message-ID: <2641@arrl.org>
Source record: 119211

Maybe big advantage to filtering is that you don't
really have to be able to know what is going on--to
get better unwanted sideband reject you merely throw
more more parts in until you meet spec :-).

But, with phasing, in order to improve your design,
you have to know where the errors are, which might
not be intuitively obvious. Thus, unless you
really know what you are doing, you can go
around in circles improving circuits that work
just fine, while the real problem lies untouched.

BTW, the errors are typically too small to be
measured directly.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 2 way QRP contacts--700+ stations worked
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
Phone (if you really have to): 203-666-1541

995. How to calibrate a DVM

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 22:12:56 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <93112308274892@pubcon.fort-worth.tx.us>
Source record: 119068

i wouldnt recomend calibrating a dvm on your own, it wont be as accurate with out using a calibration standard used at a calibration lab. they send their standards to the national bureau of standards for calibration. its really not as easy as it sounds. also, are all your meters reading the same type of voltate? eg is one reading average voltage and another reading rms voltage? this needs to be determined before you even try to calibrate them. hope this helps. 73. wb5kxw

996. Opto-isolator keying

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-22 22:20:42 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <93112308274893@pubcon.fort-worth.tx.us>
Source record: 119069

an opto isolator is nothing more than that, an led with a photo sensing device across from it. circuitry is still going to be needed to act as a switch when hooked to the output of the optoisolator. unless he can trigger his tranciever with the voltage developed by the photosensor of the optoisolator, which might be done in a grid type keying situation but it would be very unlikely. someone correct me if im mistaken. good luck 73 wb5kxw

997. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 03:23:17 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2crvn5$j5h@hpscit.sc.hp.com>
Source record: 119212

In article <1993Nov22.161752.23379@ke4zv.atl.ga.us>,
Gary Coffman <gary@ke4zv.atl.ga.us> wrote:
>
>>The non-correlation of interference is only worth 3 dB.
>
>I've seen this argued back and forth. It's true if you're just using
>a summer as a correlator. But more advanced correlators are possible.

That sounds very interesting. Can you give us an more information
about it?

>I understand that the doubler technique can be used with voice too.
>The time constant of the PLL has to be altered to a fast attack, slow
>decay curve. This may introduce a bit of distortion at the beginning
>of syllables if the attack timing is wrong.

This might be made to work after a fashion if you run the signal through
a delay line before mixing it with the recovered carrier so that the
PLL has a chance to lock up first. Anyone know of any actual
experiments?

>Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary

Rick Karlquist N6RK
rkarlqu@scd.hp.com

998. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 03:42:02 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2cs0qa$jn0@hpscit.sc.hp.com>
Source record: 119213

>>His clocks at the NIST in Boulder are across the hall from the atomic
>>clock that is the primary standard, and run all the time. They are
>>calibrated by the atomic standard, when it runs, which is relatively
>>seldom.
>>73, doug
>
>Oh no! You mean the WWV clock I have heard for the last 20+ years aren't
>tied directly into the atomic standard? I'm shattered, having had this image
>in my head for all this time of some titanium-hulled device on a marble slab
>in a sealed vault to which WWV clock was attached. Funny how images like
>that, no matter how ludidrous, remain with us as long as there's no reality
>to displace them.
>
> Kevin Sanders, KN6FQ | ___ |

Let me try to shed some light on this. First, you need to distinguish between a usable clock that keeps time over long periods of time and a laboratory frequency standard that measures frequency during the occasional times when it is running.

The working clocks at NIST consist of a bunch of mainly HP 5061 and 5071 cesium atomic clocks, which are kept in controlled temperature and humidity boxes. Their time is averaged to get the official NIST time, which is then averaged with other country's times and the US Naval Observatory's time. Worldwide Universal Coordinated Time (UTC) is kept in Paris by the French equivalent of NIST (BIPM) and is the average of the best 200 or so clocks in the world.

The laboratory frequency standards that fill a room, and are called NIST-4, NIST-6, NIST-7, etc. are continually being improved upon and run only occasionally for operational purposes. They are used to attempt to measure absolute frequency error in the on-line clocks. The physics of the small on-line clocks limit the absolute frequency accuracy to a few parts in 10 to the 13th while the lab standards are known to be good to a few parts in 10 to the 14th. Once the error in the on-line clocks is known, it can be corrected for since an HP 5071 is stable to a part in 10 to the 14th, for example.

Rick Karlquist N6RK
HP Santa Clara Division (where the HP5071 atomic clock is made)
rkarlqu@scd.hp.com

999. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 07:16:28 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov23.071628.27387@ke4zv.atl.ga.us>
Source record: 119214

In article <CGwr5J.HzG@csn.org> dfeldman@teal.csn.org (Dave Feldman) writes:
>
>Are you aware of any kw-class amps available (not surplus; designed for
>ham use)? Not for satellite -- interested for weak signal terrestrial...

I'm not aware of any commercial kW amps designed for the amateur market
in the 1.2 GHz band.

You might be able to push a 8890 or 3CX800 to 1.2 GHz in a cavity design,
but I wouldn't bet on it being stable. You might be able to do a 9 tube
ring amp using the 3CX100A5, but I suspect it would be a nightmare to tame.
Six of the German amps combined with Wilkinson combiners might do. Probably
the best choice would be a klystrode or klystron amplifier. That would
certainly be a special order item. Contact Varian, they have external
cavity klystrodes and klystrons that may be suitable.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1000. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 07:32:23 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov23.073223.27477@ke4zv.atl.ga.us>
Source record: 119215

In article <1993Nov22.201609.17703@Csli.Stanford.EDU> paulf@Csli.Stanford.EDU (Paul Flaherty) writes:
>wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>
>>I am getting active on 1270 satellites and I need an amplifier
>>to raise the 10 Watts of my rig upto about 100 watts.
>
>Most folks seem to do pretty well into AO-13 using 10w with medium gain
>yagis. If you're going for a better uplink, you might want to consider
>some of the newer optimized long boom L - Band yagis. As the the saying
>goes, aluminum tends to be cheaper than silicon...

I used 20 watts, SSB Electronics transverter mounted at the antenna, into a long Down East loop yagi, 19 db, for a while. It worked, sort of, but the required pointing accuracy is a problem, having the transverter at the antenna is a problem, and getting all the antennas boresighted to the same point in space for uplink and downlink is a pain. It's easier to use a 1.2 GHz antenna with about the same beamwidth as the 70 cm yagi and run a bit more power. About 16 db of antenna gain is about right with a 3 db loss feedline (150 foot run) and a 250 watt amp. Kilowatt hours are even cheaper than aluminum if you aren't operating continously. :-)

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1001. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 07:52:49 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov23.075249.27705@ke4zv.atl.ga.us>
Source record: 119216

In article <2639@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>>
>>Or you can take the modern approach and use Wilkinson power combiners
>>and a bunch of the 20 watt Mitsubishi solid state bricks. That get's
>>expensive fairly fast though, say 12 modules for a 240 watt amp, and
>>you need a hefty low voltage supply, and insurance that you always have
>>a good termination impedance and lightning protection.
>
>Anyone actually blow up these devices with a high SWR despite
>good heat sinking? At rated power, they are usually designed to
>withstand a 20:1 SWR, though this undoubtedly degrades if you are
>running them at twice their rated power :-).

My concern was whether they would be unconditionally stable into
certain reactive loads. I've had UHF bricks oscillate if the
100 ohm resistor in the Wilkinson combiner opens.

>Keep in mind that it is pretty easy to mount a solid state amp
>at the antennas, while only a real *fanatic* would run a water
>cooled tube amplifier at the top of a tower. Thus, you might
>factor in the feedline loss to get a more realistic comparision.

I don't like to mount expensive solid state amps and their heavy
DC supplies up where the lightning plays. It's bad enough to have
to climb up and replace preamps. I want an elevator if I have to
service power amplifiers and 50 amp DC supplies on the tower. :-)

Gary

--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1002. Squelch add on

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 13:37:44 UTC
From: dmb@abacus.demon.co.uk
Message-ID: <CGy5uw.6Aw@abacus.demon.co.uk>
Source record: 119217

I'm currently building a gen. coverage SW superhet. The basic design is quite
simple:
RF amp/VFO/mixer/2xIF stages/BFO/prod.detector/detector/AGC/CW filter/AF amp.
I'd like to incorporate a squelch control, but don't know how it would work,
or where I'd incorporate it into the design.

Any references/articles/handbook pointers would be much appreciated.

73

David.
--
David Byrne, Abacus Software, London, UK Tel: +44 71 930 4884
Email: dmb@abacus.demon.co.uk Fax: +44 71 839 7445
Here's a koan: If you have ice-cream I will give you some. If you have none,
I will take it away from you. (it's an ice-cream koan).

1003. Re: single sideband generation

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 17:12:48 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov23.171248.887@ke4zv.atl.ga.us>
Source record: 119070

In article <2crvn5$j5h@hpscit.sc.hp.com> rkarlqu@scd.hp.com (Richard Karlquist) writes:
>In article <1993Nov22.161752.23379@ke4zv.atl.ga.us>,
>Gary Coffman <gary@ke4zv.atl.ga.us> wrote:
>>
>>>The non-correlation of interference is only worth 3 dB.
>>
>>I've seen this argued back and forth. It's true if you're just using
>>a summer as a correlator. But more advanced correlators are possible.
>
>That sounds very interesting. Can you give us an more information
>about it?

Well it's tricky in the analog domain, but I've seen one circuit that
takes advantage of the common mode rejection of opamps to derive a
channel that has all the non-correlated noise and interference but
with the desired common signal suppressed by 60-80 db by the opamp's
common mode rejection. The anti-correlated signal is then inverted and
added back to the main channel, cancelling the undesired noise and
interference. Needless to say, the balance of this circuit is critical
to it's operation. It should be much easier to implement in DSP.
Note this technique assumes ISB detection as well since it requires
two separate audio channels. It's not a classic DSB detector.
If true IF DSP is available, this could all be combined into one
digital circuit.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1004. 210XL Bearcat Scanner to read 1012Mhz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 18:39:57 UTC
From: n3022@cray.com
Message-ID: <1993Nov23.123957.25833@hemlock.cray.com>
Source record: 119071
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.shortwave,sci.electronics

I am posting on behalf of my father, a retired
news photographer who was out there in the action
almost every day. Since retirement, most of the
"action" he has experienced has been through
shortwave (and scanner) monitoring. He has listened to
the local police dept for years on 154Mhz. Now the
city hall has purchased 900Mhz equipment and have left
him in the dark.

Rather than buying a new scanner, my father is wondering
if there is a converter that will double the upper-end
frequency capability of his 210XL Bearcat Scanner from
512Mhz to 1012Mhz. Has anyone run across one?

Thanks for your help,

Jim
n3022@cray.com

1005. Direct Conversion with CW RIT

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 18:56:11 UTC
From: R0264@vmcms.csuohio.edu
Message-ID: <16C8FC3FB.R0264@vmcms.csuohio.edu>
Source record: 119072

I had a HW8 with added RIT, and loved to be able to go above or below the zero-beat point. Also, zero beating was a snap -- turn off the RIT, zero beat to zero frequency, and flip the RIT back on and adjust it to a comfortable audio freq. This does not seem to be possible with dual conversion SSB/CW equipment. Is it?
------ Phil Emerson, AA8JO

1006. LB1473 chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 20:03:29 UTC
From: fmitch@netcom.com
Message-ID: <fmitchCGynpu.3Jo@netcom.com>
Source record: 119074

hi, mitch, wa4osr here in mobile, alabama...

i have a hal cri-200 "dumb" rtty modem which has a very nice x/y
tuning display using a led diode matrix... the chips which drive
the matrix are labeled LB1473 ... i don't reconginze the manufacturer
on the chips... no name, just a logo...

anyway, i want to build a stand alone tuning unit to use with some of
the more "modern" modems, and would like to duplcate the circuit in
the cri-200 ... i have tried to find the lb1473 chips to no avail...
no reference or cross-reference has them listed... does anyone know
of a source of these chips or a substitute... and, if i find the
chips, i desperately need a data sheet on them...

many thanks if you can help...

mitch, wa4osr
--
---
fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

1007. Anybody marketing HF kits ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 20:03:36 UTC
From: ron@etch-eshop.Berkeley.EDU
Message-ID: <2ctqao$rfs@agate.berkeley.edu>
Source record: 119073

I'm wondering, does anyone know if (who) markets Ham radio kits.

I'm not yet involved in the hobby, But I could get interested in
building an HF rig. I seen mentioned "Daves kits" here om the net.

Thanks

Ron Viegelahn

ron@etcheshop.Berkeley.EDU

1008. swr protection project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-23 22:40:44 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <931124064632106@pubcon.fort-worth.tx.us>
Source record: 119076

i would think if youre only using 1 watt, you could use a resistor whose power rating exceeds that by 3 or so and you would not have anything to worry about. in such a case, if all the power were reflected back to the transmitter, you should have less than two watts there maximum. does this make sense to anyone but me? 73 and good luck. b. wb5kxw

1009. Re: 210XL Bearcat Scanner to read 1012Mhz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-24 01:33:59 UTC
From: schuster@panix.com
Message-ID: <2cudm7$q1k@panix.com>
Source record: 119075
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc,rec.radio.shortwave,sci.electronics

In article <1993Nov23.123957.25833@hemlock.cray.com>,
Jim Knoll <n3022@cray.com> wrote:
>I am posting on behalf of my father, a retired
>news photographer who was out there in the action
>almost every day. Since retirement, most of the
>"action" he has experienced has been through
>shortwave (and scanner) monitoring. He has listened to
>the local police dept for years on 154Mhz. Now the
>city hall has purchased 900Mhz equipment and have left
>him in the dark.
>
>Rather than buying a new scanner, my father is wondering
>if there is a converter that will double the upper-end
>frequency capability of his 210XL Bearcat Scanner from
>512Mhz to 1012Mhz. Has anyone run across one?

Suggest that you post in alt.radio.scanner and rec.radio.scanner

GRE America makes two such boxes; one for handheld and one for
desktop scanners. They don't double the coverage range but downconvert
810-950 to 410-550. You can call them at 415-591-1400 or
800-233-5973.

Frankly, I'd just buy a new scanner having 800 MHz capability. There
are newer devices having much better performance than the old BC
scanners. Again, look on the two scanner newsgroups and you'll get an
avalanche of recommendations.

--
Mike Schuster | schuster@panix.com | 70346.1745@CompuServe.COM
------------------- | schuster@shell.portal.com | GEnie: MSCHUSTER

1010. Re: LB1473 chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-24 13:08:14 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov24.130814.5629@ke4zv.atl.ga.us>
Source record: 119077

In article <fmitchCGynpu.3Jo@netcom.com> fmitch@netcom.com (Felton Mitchell) writes:
>i have a hal cri-200 "dumb" rtty modem which has a very nice x/y
>tuning display using a led diode matrix... the chips which drive
>the matrix are labeled LB1473 ... i don't reconginze the manufacturer
>on the chips... no name, just a logo...

Sounds like a copy of the National Semiconductor bargraph driver
chips to me.

>anyway, i want to build a stand alone tuning unit to use with some of
>the more "modern" modems, and would like to duplcate the circuit in
>the cri-200 ... i have tried to find the lb1473 chips to no avail...
>no reference or cross-reference has them listed... does anyone know
>of a source of these chips or a substitute... and, if i find the
>chips, i desperately need a data sheet on them...

Radio Shack carries the National bargraph driver chips. Data sheets
included.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1011. Re: LB1473 chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-24 14:54:48 UTC
From: gary@vulcan.com
Message-ID: <2XXiDc1w165w@vulcan.com>
Source record: 119080

fmitch@netcom.com (Felton Mitchell) writes:

> hi, mitch, wa4osr here in mobile, alabama...
>
> i have a hal cri-200 "dumb" rtty modem which has a very nice x/y
> tuning display using a led diode matrix... the chips which drive
> the matrix are labeled LB1473 ... i don't reconginze the manufacturer
> on the chips... no name, just a logo...
>
> anyway, i want to build a stand alone tuning unit to use with some of
> the more "modern" modems, and would like to duplcate the circuit in
> the cri-200 ... i have tried to find the lb1473 chips to no avail...
> no reference or cross-reference has them listed... does anyone know
> of a source of these chips or a substitute... and, if i find the
> chips, i desperately need a data sheet on them...
>
> many thanks if you can help...
>
> mitch, wa4osr
> --
> ---
> fmitch@netcom.com
> Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
> 205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
> co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..
> ---

I've also been thinking of building a solid-state tuning indicator. I am presently using a scope, but it is old (and the only tube device left in the shack). My question is, what is the size of the LED matrix, and where does one obtain a matrix.

I assume that, with a matrix, a scope-type indicator can be emulated with a pair of A to D converters. Connecting the output of the converters to the matrix could be another problem, though, since one would need to address both x & y coordinates.

I've looked into using an LCD screen, but those seem to be addressed sequentially. For tuning indicators, I'm not sure that they are appropriate.

--

Gary Tennyson BellSouth Telecommunications, Inc.

Internet: gary@vulcan.com

1012. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-24 15:04:03 UTC
From: mack@fcs260c.ncifcrf.gov
Message-ID: <CH04Ir.5Bp@ncifcrf.gov>
Source record: 119078

In article <2639@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>>In article <CGuIx7.1LE@cbnewsh.cb.att.com> wa2sff@cbnewsh.cb.att.com (joseph.e.wilkes) writes:
>>>I am getting active on 1270 satellites and I need an amplifier
>>>to raise the 10 Watts of my rig upto about 100 watts.
>>>Are there any good articles or kits for 2c39 amplifiers?
>>>
>>>The one the in arrl handbook needs a small machine shop to
>>>build. Does anyone make kits?
>>
>>Or you can take the modern approach and use Wilkinson power combiners
>>and a bunch of the 20 watt Mitsubishi solid state bricks. That get's
>>expensive fairly fast though, say 12 modules for a 240 watt amp, and
>>you need a hefty low voltage supply, and insurance that you always have
>>a good termination impedance and lightning protection.

...And (I think it's Zack who replies)

>
>Keep in mind that it is pretty easy to mount a solid state amp
>at the antennas, while only a real *fanatic* would run a water
>cooled tube amplifier at the top of a tower. Thus, you might
>factor in the feedline loss to get a more realistic comparision.

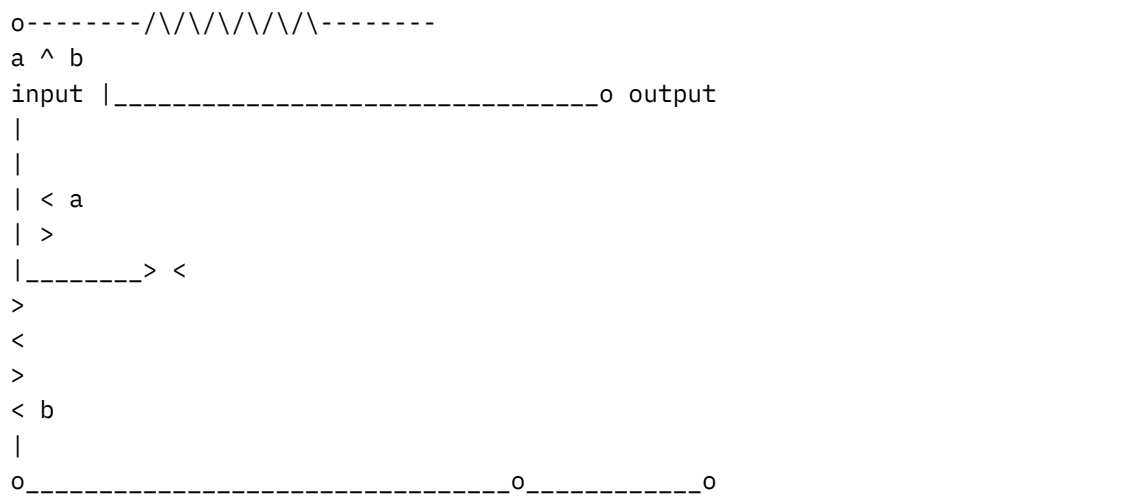
Zack how do you get 240W of 12 V up a tower?
Jo NA3T
(sorry thats Joe)
Joseph MACK NA3T mack@ncifcrf.gov

1013. Re: schematic for audio T pad?

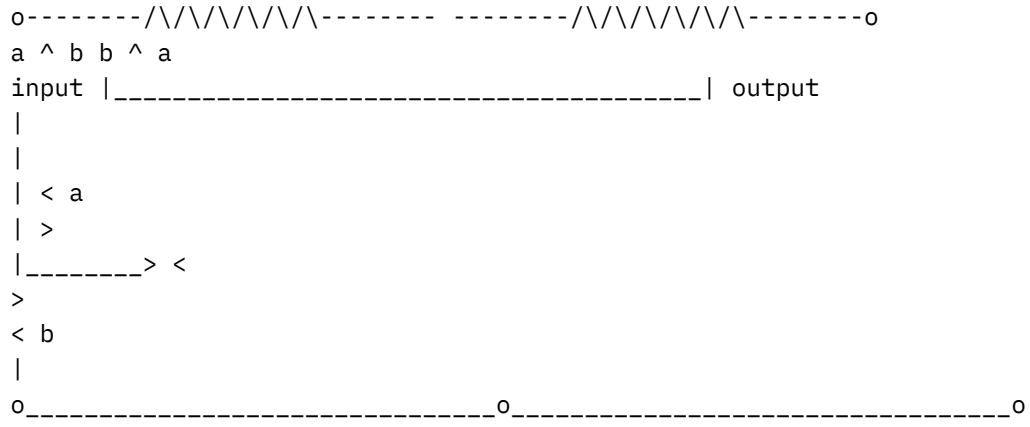
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-24 18:48:03 UTC
From: eburton@buphy.bu.edu
Message-ID: <2d0a93$rje@news.bu.edu>
Source record: 119079
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

mac@cis.ksu.edu (Myron A. Calhoun) writes:
>Can anyone please show me the schematic of a "T pad" for remote-
>control. I know that a T pad uses at least two variable pots
>and probably keeps the input impedance relatively constant, but
>I haven't been able to re-invent the circuit by diddling around.

Here is an L-pad. The pots are ganged (ie, they have the same shaft)
and are set up so that impedance seen at the input remains constant.
The letters "a" and "b" indicate where the wipers are for (a) maximum output
and (b) minimum output.



And below is a T-pad, which uses three ganged pots to keep the input
and output impedance constant while varying the voltage divider ratio:



I think that's the basic idea anyway. I hope this helps.

-Erich

Erich Burton -- eburton@buphy.bu.edu
Undergraduate Laboratory Coordinator
Boston University Physics Department

1014. swr protection project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-25 01:26:49 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <931125085938108@pubcon.fort-worth.tx.us>
Source record: 119082

oops that should read transistor, not resistor. sorry. b wb5kxw

1015. Upgrade to a Micor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-25 02:57:50 UTC
From: bills@inqmind.bison.mb.ca
Message-ID: <4eVJDc2w165w@inqmind.bison.mb.ca>
Source record: 119083

Never volunteer to be on the technical comittee of a repeater
club unless you have some idea of what's involved:
Anyway....I'm a member of a repeater group that is currently
involved in interconnecting repeater sites in several spots
in southern Manitoba. At our last executive meeting, I was
told we've had a complaint that our "flagship" repeater has
a front end so broad that it lets in calls 20 khz off-channel -
this is well past the adjacent channel and getting into the
deep woods. The VHF receiver is a Micor mobile, with the
usual adaptions to repeater service. Is it possible to
get some third-party upgrade filter to tighten the response
a bit, and upgrade this - or should we start saving
up for a commercially built repeater ?
(And is this problem related to the fact that the repeater is
on a CBC broadcast tower with 100,000 watts of various
broadcast transmitters on it ?)
Bill

bills@inqmind.bison.mb.ca-
The Inquiring Mind BBS, Winnipeg, Manitoba 204 668-8845

1016. 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-25 11:50:38 UTC
From: blumb@sage.cc.purdue.edu
Message-ID: <CH1q8E.BCu@mentor.cc.purdue.edu>
Source record: 119081

Well, I have a choice.

I can either shell out the $$ to buy a 2m amp for my HT, or I can buy a
theory book, learn theory, and build one.

Recommendations either way?

--
Bill Blum N9VLS blumb@sage.cc.purdue.edu Purdue University, W. Lafayette, IN
Reality is for those who can't handle subscribing to IASFM and Model Railroader

1017. Re: Phase-lock to WWV ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-25 16:34:07 UTC
From: matt.mccullar@pubcon.fort-worth.tx.us
Message-ID: <9311260737221111@pubcon.fort-worth.tx.us>
Source record: 119088

You think YOUR dreams are shattered. When I was a kid and my dad tuned in WWV for me for the first time, I thought that the government had chained some poor dope to a microphone, forcing him to read the time once each minute for as long as he lived. Then one night, with the bands wide open, I could hear WWVH in Hawaii, and I thought, "Oh, great. Now that guy has a lady to keep him company."

1018. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-25 19:27:36 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov25.192736.63185@yuma.ACNS.ColoState.EDU>
Source record: 119084

In article <CH1q8E.BCu@mentor.cc.purdue.edu> blumb@sage.cc.purdue.edu (Bill Blum) writes:
>Well, I have a choice.
>I can either shell out the $$ to buy a 2m amp for my HT, or I can buy a
>theory book, learn theory, and build one.
>Recommendations either way?
>Bill Blum N9VLS blumb@sage.cc.purdue.edu Purdue University

You could get a Ramsey PA-1 kit, 30 watts or so with 3 watts in. Comes
in a kit w/o case,heatsink,switching or yo can get it fully assembled.
The kit is about $30 and the assembled is about $90.
Ramsey Electronics
716-924-4560
793 Canning Pkwy
Victor, NY 14564

1019. Phasing SSB - new part that might help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 01:04:24 UTC
From: jjw@seastar.org
Message-ID: <CH2qzE.D6L@seastar.org>
Source record: 119085
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

Regarding the recent discussions about SSB generation & detection using
phasing, has anybody seen the ad on pg 37 of November's Microwaves &
RF? It looks like Mini-Circuits has a new device - a 90 degree
splitter with <1 degree of phase unbalance and <.2db of amplitude
imbalance from 3.2 to 32MHz. Cost is 89.95 qty 1-9.
Looks interesting... Anybody out there try this yet?
-->jjw n9jzw jjw@seastar.org

--
John Welch, N9JZW

1020. Re: LB1473 chips?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 03:57:05 UTC
From: fmitch@netcom.com
Message-ID: <fmitchCH2yz5.AI1@netcom.com>
Source record: 119086

Gary Tennyson (gary@vulcan.com) wrote:

: I've also been thinking of building a solid-state tuning indicator. I am
: presently using a scope, but it is old (and the only tube device left in
: the shack). My question is, what is the size of the LED matrix, and
: where does one obtain a matrix.

: I assume that, with a matrix, a scope-type indicator can be emulated with
: a pair of A to D converters. Connecting the output of the converters to
: the matrix could be another problem, though, since one would need to
: address both x & y coordinates.

: I've looked into using an LCD screen, but those seem to be addressed
: sequentially. For tuning indicators, I'm not sure that they are
: appropriate.

: --

: Gary Tennyson BellSouth Telecommunications, Inc.

: Internet: gary@vulcan.com

hi gary... thanks for responding...

the cri-200 uses two of the lb1473 chips, one for x and one for y...
the matrix is 8x13 using parts of 4 5x7 led matrix chips... the
lb1473 chips are ac coupled out of the equivalent of the scope outputs
of the cri-200... and it works just like a scope! really a nice tuning
indicator... my friend, marv, k4bvg and i are looking at designing a
stand alone tuning indicator using a led matrix and we thought the
cri-200 circuit warrants some experimentation... the stand alone unit
will use the x and y output from the modem to avoid having to have
filters in the tuning unit... marv says he thinks the 3914 led driver
chip from rad shack will work but we haven't got a data sheet yet to
see... and the led matrix units are cheap... 3-5 bux from digi key for
5x7 matrix... or u can buy leds in sticks to stack any way you want
the matrix to appear... keep the net posted on any experiments you
conduct...

mitch, wa4osr
fmitch@netcom.com
--
---
fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

1021. WANTED: Davco DR-30 receiver

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 06:58:57 UTC
From: fmitch@netcom.com
Message-ID: <fmitchCH37EA.KC6@netcom.com>
Source record: 119087

hi, mitch, wa4osr here in mobile, alabama...

i am looking for a Davco DR-30 receiver, working or not... email me
here or call numbers below...

thanks,
mitch, wa4osr
fmitch@netcom.com
205-342-7259 home
205-476-4100 work
205-476-0465 fax

--
---
fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

1022. Kenwood TS-440-S For Sale

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 14:28:49 UTC
From: toddwulf@netcom.com
Message-ID: <toddwulfCH3s81.Hz1@netcom.com>
Source record: 119089

Kenwood TS-440-S for sale with 200 watt power supply. Any offers?

--

toddwulf@netcom.com

1023. Re: Phasing SSB - new part that might help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 18:12:17 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov26.181217.36035@yuma.ACNS.ColoState.EDU>
Source record: 119090
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

In article <CH2qzE.D6L@seastar.org> jjw@seastar.org (John Welch) writes:
> Regarding the recent discussions about SSB generation & detection using
>phasing, has anybody seen the ad on pg 37 of November's Microwaves &
>RF? It looks like Mini-Circuits has a new device - a 90 degree
>splitter with <1 degree of phase unbalance and <.2db of amplitude
>imbalance from 3.2 to 32MHz. Cost is 89.95 qty 1-9.
> Looks interesting... Anybody out there try this yet?
>-->jjw n9jzw jjw@seastar.org
>John Welch, N9JZW

Mini-Circuits also has 90 deg. splitters with less stringent specs for
$10-50 with various freq ranges.

What is a practical limit for Phase and Amplitude unbalance to be able
to use a phasing exciter?

Are there any other companies making 90 deg. power dividers?

Galen, KF0YJ

1024. Legality of Homebrew Frequency Hopping

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 18:27:22 UTC
From: mark@alf.cooper.edu
Message-ID: <1993Nov26.182722.17738@alf.cooper.edu>
Source record: 119092

Hello,
I am posting these questions for current information only so
that I can better consider a project that I would like to undertake
in the future. Simply put, I am interested in utilizing some of the
more open frequency bands (27 MHz, 49 MHz, 6 meter, 72 MHz) in such
a way as to have two transceivers communicate with each other and,
when interference on the current channel is detected, hop to another
channel nearby. My specific intended application is in RC aircraft
where interference on one of the 10 KHz wide control channels can
mean the loss of an expensive plane, property damage and personal
injury. RC aircraft primarily use the 72 Mhz band and have dozens
of channels within this band. From a legal point of view (FCC),
what would the restrictions be on a homebrew transceiver system that
is capable of hopping between different channels within the 72 MHz
band? What would be the restrictions on the same idea in the
licensed 6-meter band or the unlicensed 27/49 Mhz bands?

I'd like to stress that this is for information only right now
to provide myself with a reality check on my ideas. Thanks for the
help and advice in advance!

; Mark Balch The Future is MPP!
; The Cooper Union mark@alf.cooper.edu [slow but reliable]
; (212) 353-4350 mark@magnum.cooper.edu [fast but chancy]

1025. Re: Phasing SSB - new part that might help.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 18:29:07 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <2d5htj$fli@reznor.larc.nasa.gov>
Source record: 119091
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew

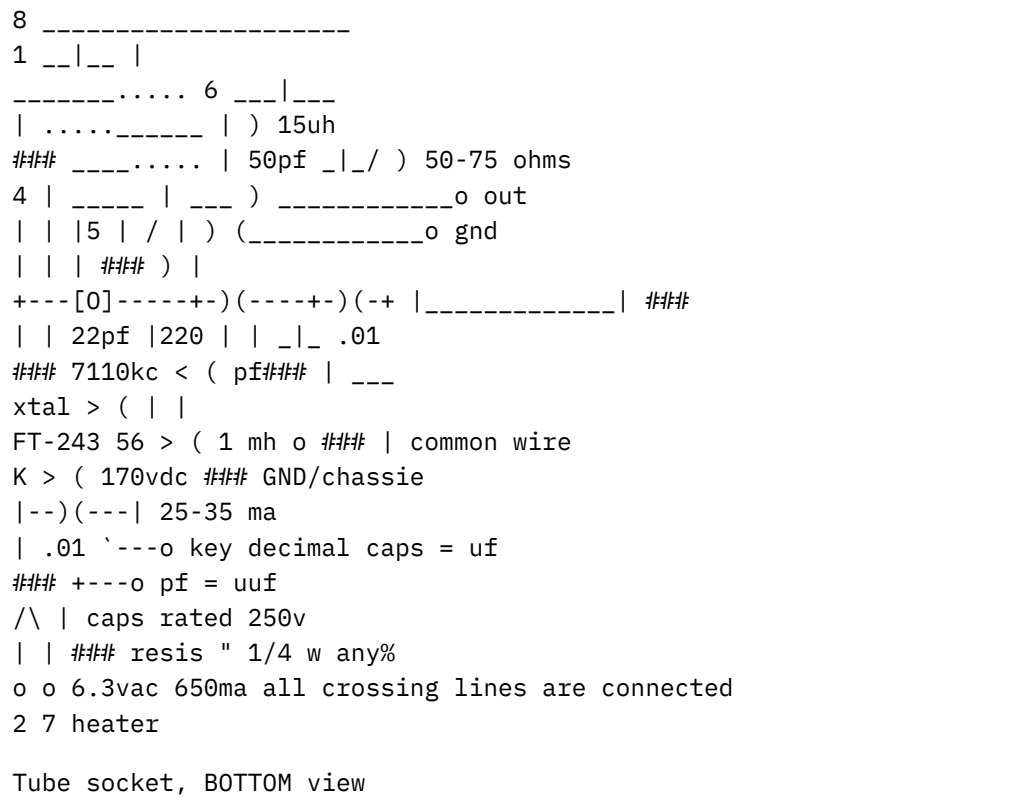
In article <Nov26.181217.36035@yuma.ACNS.ColoState.EDU> galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>In article <CH2qzE.D6L@seastar.org> jjw@seastar.org (John Welch) writes:
>> Regarding the recent discussions about SSB generation & detection using
>>phasing, has anybody seen the ad on pg 37 of November's Microwaves &
>>RF? It looks like Mini-Circuits has a new device - a 90 degree
>>splitter with <1 degree of phase unbalance and <.2db of amplitude
>>imbalance from 3.2 to 32MHz. Cost is 89.95 qty 1-9.
>
>Mini-Circuits also has 90 deg. splitters with less stringent specs for
>$10-50 with various freq ranges.
>
>Are there any other companies making 90 deg. power dividers?

Has anyone here used any of the phasing networks from Networks, Inc.?
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

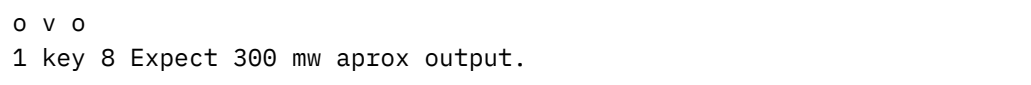
1026. 1 TUBE transmitter for QRP

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-26 23:36:11 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Nov26.233611.11152@cyphyn.radnet.com>
Source record: 119093

6AG7 one tube xmit 40 mtrs (daytimer)



Tube socket, BOTTOM view



Expect 300 mw aprox output.

15 uh ... 35 turns 7/8" dia, 1 " long
link coil 6 turns #22 to 28 wire OK

50 pf ok if FRS's 55pf trimmer cap
Xtal W0LPS (CW Crystal co)
Tube socket FRS or Antique Electronic Supply (AES)

FRS= Fair Radio Sales

170vdc is from a 110-125vac xformer..whose 6.3 v 600 ma coil is wired
to the Filament xformer (6.3vac 2 amps).
This converts 6.3 v back up to isolated 110vac.

A bridge rect (400piv 1 amp) followed by 220 uf 200vdc electrolytic
will make 175-180vdc (no load).
At 35 ma, it may fall to 150vdc, but is OK for this rig.

Note...a 6CL6 or 12BY7 (different socket wiring) will work the same
as this one will....so, a sub of tube (and rewire socket) can be done.
Those 2 tubes are 9 pin mini tubes
12HG7 will sub 12BY7 directly. (if ya need info on that, buzz me)

Note... a 5902 sub-mini tube (direct-solder in like a transistor)
will also work in ckt above, but B+ must be dropped to 90-120vdc.
A choke (8-16 hy 40ma) put between 220uf 200v and rect. will do that.

Tune up: Altho a 3 volt 25 ma bulb in series to the key will work as
a current indicator, you can use station Rx set to tell when it is
correctly tuned (least chirp & raspyness as you key).
Full power does not quite occur at same point as best keying does...
no loaded osc ever does....but you'll have same S-reading 'out there'
so just go for a clean sig.

Start with the 50pf at full mesh, tap the key repeatedly and adj
the cap until you hear the signal (see it on bulb as a sudden change
in britness)..or see it on a watt meter (good luck!), if it can read
that low.
Then adj for cleanest signal.

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

1027. Re: Amplifier for 1270MHz

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 02:14:26 UTC
From: zlau@arrl.org
Message-ID: <2646@arrl.org>
Source record: 119094

In rec.radio.amateur.homebrew, mack@fcs260c.ncifcrf.gov (Joe Mack) writes:

>
>Zack how do you get 240W of 12 V up a tower?
> Jo NA3T
> (sorry thats Joe)
> Joseph MACK NA3T mack@ncifcrf.gov

First of all, I wouldn't try run a whole bunch
of power amplifiers of a single supply. After all,
one of the benefits of using hybrids is redundancy.

Also, rather than using Wilkenson combiners, I'd
probably use ring hybrids, similar to those used
by Chip Angle in the April 1991 QST. It seems a
lot easier to get 50 ohm terminations than 100
ohm terminations for the Wilkensons.

I'd mount the power transformer at the base of the
tower and run either unregulated DC or low voltage
AC up the tower. The AC case has less loss so I'll
look at the DC case.

12 Gauge wire has a resistance of 1.6 ohms/1000
ft., so I guess you would lose 3.2 volts if it drew
10 amps through 100 ft. of cable. Since most
supplies are designed to put out 13.8, rather
than 12.0 volts, it isn't quite as bad as it
sounds. Low dropout PNP type regulators could
be used to make up the difference. I'd probably
recommend 2 DC cables up the tower feeding 3
regulators each. Thus, if a cable failed, the
amplifier would still be functional, though at
reduced power.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

1028. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 03:08:07 UTC
From: zlau@arrl.org
Message-ID: <2647@arrl.org>
Source record: 119095

In rec.radio.amateur.homebrew, blumb@sage.cc.purdue.edu (Bill Blum) writes:
>Well, I have a choice.
>
>I can either shell out the $$ to buy a 2m amp for my HT, or I can buy a
>theory book, learn theory, and build one.
>
Depends whether you want to learn about amplifiers
or save money.

If you want to learn about them, blowing up $50 in
power transisistors is probably cheap in comparision
to other educational expenses.

But, saving money is unlikely unless someone gives
you the parts to build build it (Does HP still do
that for their employees?)

Unfortunately, the design of a 10 watt VHF amp just
isn't that cut and dry, like operational amplifiers.
There are commercial products out there can be easily
mistuned into oscillators. Part of the problem is
the lack of information, particularly with bipolar
VHF transistors. Thus, you tend to see a lot of
guesswork On the other hand, you often don't see
much of an attempt to obtain stability....

The VHF FETs aren't as bad--at least you can often get
small signal data that is useful in designing in
stability, though additional tweaking is sometimes
needed for best power matching. But, these tend to
be more expensive and not run well off of 12 volts.
Also, for some reason, the high power ones seem to
be rather fragile (MRF 141G only specified at a 5:1
mismatch), though the 30 watt devices are pretty rugged.

I'm thinking of writing up a stable 2 to 10 watt MRF 137
design, though it needs a 23 volt power supply. Running
it off a voltage doubler add spurs 75 dB down, so that
part still needs work.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz

Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

1029. WANTED: Webster Band-Spanner

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 05:22:03 UTC
From: fmitch@netcom.com
Message-ID: <fmitchCH4xKs.CuD@netcom.com>
Source record: 119096

hi, mitch wa4osr here in mobile, alabama...

i am looking for a webster band spanner mobile antenna... if you have
one you would like to get rid of please email me or call me at the
numbers below...

thanks,
mitch, wa4osr
fmitch@netcom.com

--
---
fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

1030. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 15:03:35 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov27.150335.17476@ke4zv.atl.ga.us>
Source record: 119097

In article <CH1q8E.BCu@mentor.cc.purdue.edu> blumb@sage.cc.purdue.edu (Bill Blum) writes:
>Well, I have a choice.
>
>I can either shell out the $$ to buy a 2m amp for my HT, or I can buy a
>theory book, learn theory, and build one.
>
>Recommendations either way?

Buy the book! _Solid State Design for the Radio Amateur_ is growing whiskers, but is still a good starting point. A somewhat more advanced treatment is Chris Bowick's _RF Circuit Design_. Others will have their favorite references to recomend. I'd suggest starting with a simple 2E26 amp like the PA in figure 17-24 of the 1962 Handbook. Tube designs are simple and forgiving, and they glow pleasantly in the dark. :-)

Somebody suggested the Ramsey PA kit. You won't learn much circuit theory from building it, but you'll learn a *lot* about taming spurious outputs when you attempt to tune it. You might want it anyway as a convienent source of metalwork and hardware that you can use to build a decent amp. Or, you can pull a no-brainer and use one of the many power brick ICs that are available. They're great, but you won't learn much interfacing power to a 50 ohm in and out, unconditionally stable, amplifier IC.

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1031. AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 16:21:32 UTC
From: mbutts@netcom.com
Message-ID: <mbuttsCH5s3w.6w@netcom.com>
Source record: 119098

In the ARRL's "Solid State Design for the Radio Amateur", by Hayward and DeMaw, on p. 184 of the 1986 edition, after a nice summary of filter and phasing principles, plus a mention of Weaver, they say:

"Also, it may be shown mathematically that a carrier which is amplitude modulated properly and frequency modulated simultaneously will yield a single-sideband output."

I haven't succeeded in figuring this out. Can someone show this mathematically or otherwise? Has it ever been done in a real system?

By the way, Appendix 1 of this fine book has a one-page treatment of phasing SSB math.

73 de KC7IT

Mike Butts, Portland, Oregon mbutts@netcom.com

1032. Re: AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 18:06:27 UTC
From: bobw@col.hp.com
Message-ID: <2d84v3$2eu@hp-col.col.hp.com>
Source record: 119104

Mike Butts (mbutts@netcom.com) wrote:
: In the ARRL's "Solid State Design for the Radio
: Amateur", by Hayward and DeMaw, on p. 184 of
: the 1986 edition, after a nice summary of
: filter and phasing principles, plus a mention
: of Weaver, they say:

: "Also, it may be shown mathematically that
: a carrier which is amplitude modulated
: properly and frequency modulated
: simultaneously will yield a single-
: sideband output."

: I haven't succeeded in figuring this out.
: Can someone show this mathematically or otherwise?
: Has it ever been done in a real system?

Short hand-waving explanation follows...

Amplitude modulation has sidebands symmetrical about the carrier
(i.e. upper sideband is mirror image of lower sideband)
NARROWBAND FM has the same sidebands as AM but with one sideband
out of phase with the other.
Combining (subtracting?) an AM and narrowband FM with the same
modulating signal can cancel out one of the sidebands. I think
subtracting may be in order here to get rid of the carrier and
leave only the desired single-sideband.
The matching requirements throughout the system are significant.
That is, any mismatch between the modulating schemes will result
in a partial appearance of the unwanted sideband.

Bob Witte / HP PMO (Colo Springs) / bobw@col.hp.com / KB0CY / (719) 590-3230

1033. Re: AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 18:13:49 UTC
From: bobw@col.hp.com
Message-ID: <2d85ct$2eu@hp-col.col.hp.com>
Source record: 119105

I wrote:
< AM + FM = SSB discussion >
: Short hand-waving explanation follows...

: Amplitude modulation has sidebands symmetrical about the carrier
: (i.e. upper sideband is mirror image of lower sideband)
: NARROWBAND FM has the same sidebands as AM but with one sideband
: out of phase with the other.
: Combining (subtracting?) an AM and narrowband FM with the same
: modulating signal can cancel out one of the sidebands. I think
: subtracting may be in order here to get rid of the carrier and
: leave only the desired single-sideband.
: The matching requirements throughout the system are significant.
: That is, any mismatch between the modulating schemes will result
: in a partial appearance of the unwanted sideband.

I just remembered, I once worked out the math to this, but for
the case where the carrier does not get cancelled out.

See Chapter 6.10 of "Spectrum and Network Measurements" by R.A Witte,
Prentice Hall, 1991.

Bob Witte / HP PMO (Colo Springs) / bobw@col.hp.com / KB0CY / (719) 590-3230

1034. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 19:08:07 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Nov27.190807.85251@yuma.ACNS.ColoState.EDU>
Source record: 119099

In article <2647@arrl.org> zlau@arrl.org (Zack Lau) writes:
>
>I'm thinking of writing up a stable 2 to 10 watt MRF 137
>design, though it needs a 23 volt power supply. Running
>it off a voltage doubler add spurs 75 dB down, so that
>part still needs work.
>Zack Lau KH6CP/1
>Internet: zlau@arrl.org

I've read that if you run a 24 volt device on 12 volts, you get more
protection against high SWR. Do the transistors 'not like' this?

What are the differences between bipolar and FET devices when you
lower the voltage?

Trying to get 100 watts on 6m,
Galen, KF0YJ

1035. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-27 22:42:56 UTC
From: zlau@arrl.org
Message-ID: <2648@arrl.org>
Source record: 119100

In rec.radio.amateur.homebrew, galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>In article <2647@arrl.org> zlau@arrl.org (Zack Lau) writes:
>>
>>I'm thinking of writing up a stable 2 to 10 watt MRF 137
>>design, though it needs a 23 volt power supply. Running
>>it off a voltage doubler add spurs 75 dB down, so that
>>part still needs work.
>>Zack Lau KH6CP/1
>>Internet: zlau@arrl.org
>
>I've read that if you run a 24 volt device on 12 volts, you get more
>protection against high SWR. Do the transistors 'not like' this?

I'm not sure if you really get more protection--some devices are
already rated for a 30:1 SWR with no degradation in output power.

The linearity does seem to degrade with the FETs, I've seen the
3rd order IMD come up quite a bit. On FM or CW, this isn't a
problem.

The main problem is the drop in gain--can you really afford to lose
6 dB or so in gain? This can be a real problem at 440, where you
might have only 7 or 8 dB of gain to start with.

On the other hand, 24 or 28 volts can make a lot of sense if you
are tower mounting amplifiers, since the DC voltage drop isn't as
much of a problem.
>
>What are the differences between bipolar and FET devices when you
>lower the voltage?

The cleanest amps I've built tend tend to be those using FETs
with lots of bias current. This is particularly true with
regard to high order distortion products. I'd expect the distortion
to increase with bipolars as you dropped the voltages, though I
don't recall any tests I've done.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

1036. Re: AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-28 00:11:30 UTC
From: k23690@lehtori.cc.tut.fi
Message-ID: <2d8qbi$oc7@cc.tut.fi>
Source record: 119101

Mike Butts (mbutts@netcom.com) wrote:

> In the ARRL's "Solid State Design for the Radio
> Amateur", by Hayward and DeMaw, on p. 184 of
> the 1986 edition, after a nice summary of
> filter and phasing principles, plus a mention
> of Weaver, they say:

> "Also, it may be shown mathematically that
> a carrier which is amplitude modulated
> properly and frequency modulated
> simultaneously will yield a single-
> sideband output."

> I haven't succeeded in figuring this out.
> Can someone show this mathematically or otherwise?
> Has it ever been done in a real system?

The only practical implementation I know of was used in OSCAR 7 B-mode
linear transponder. (A linear transponder passband is just a SSB signal
a few hundred kHz wide).

The amplitude information is separated at the transmitter input and
the phase information is hard limited and amplified in class-C stages.
The amplitude information controls a PWM power supply feeding the output
transistor (running in class-C) and thus also AM-modulating the signal.
The resulting signal is SSB. The total efficiency (unregulated DC to
RF) is very high, which is extremely important in satellites.

This system was developed by Karl Meinzer DJ4ZC.
I checked The Satellite Experimenters Handbook and in the list of
references there are a few related articles.

K. Meinzer,
Lineare Nahchrichtensatellitentransponder Durch Nichtlinear Signalzerlegung
(Liner Communications Satellite Transponder Using Non-linear Signal
Splitting), Doctoral Dissertation, Marburg University, Germany, 1974.

K. Meinzer,
A Frequency Multiplication Technique for VHF and UHF SSB.
QST , Oct 1970, pp 32-35.

A more developed system will be used in some transmitters in the Phase-3D
satellite, which will be launced in 1995/1996. The block diagram for the
10 GHz transmitter looks really complicated with separate feedback control
loops for phase and amplitude. A class-C UHF/SHF output stage moduleted
by varying the supply voltage, is not a particulary good AM modulator

and thus the feedback loop in the amplitude channel is required to
predistort the applied voltage.

Paul OH3LWR

Phone : +358-31-213 3657
X.400 : G=Paul S=Keinanen O=Elisa-Tampere A=ELISA C=FI
Internet: Paul.Keinanen@Telebox.tele.fi
Telex : 58-100 1825 (ATTN: Keinanen Paul)
Mail : Hameenpuisto 42 A 26
FIN-33200 TAMPERE
FINLAND

1037. Re: Upgrade to a Micor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-28 15:24:09 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Nov28.152409.21128@ke4zv.atl.ga.us>
Source record: 119102

In article <4eVJDc2w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
>Never volunteer to be on the technical comittee of a repeater
>club unless you have some idea of what's involved:
> Anyway....I'm a member of a repeater group that is currently
>involved in interconnecting repeater sites in several spots
>in southern Manitoba. At our last executive meeting, I was
>told we've had a complaint that our "flagship" repeater has
>a front end so broad that it lets in calls 20 khz off-channel -
>this is well past the adjacent channel and getting into the
>deep woods. The VHF receiver is a Micor mobile, with the
>usual adaptions to repeater service. Is it possible to
>get some third-party upgrade filter to tighten the response
>a bit, and upgrade this - or should we start saving
>up for a commercially built repeater ?
>(And is this problem related to the fact that the repeater is
>on a CBC broadcast tower with 100,000 watts of various
>broadcast transmitters on it ?)

Bill, Micor receivers aren't as good as it gets, but they are close. So if the Micor is picking up 20 kHz off channel signals, and it's working properly, then just about any other receiver placed at the site will suffer the same fate. However, the Micor *shouldn't* be having this problem. The IF filtering is quite good. What this likely means is that your Micor is sick.

Here's what I would do. First I'd look at the LO output with the spectrum analyzer to see if it's got noise spurs. This could be bringing out of bandpass signals onto the IF frequency. If the result of this test is negative, I'd run a response curve for the receiver. Sweep across the channel input and observe the limiter current with a scope synced to the tracking generator. (Most spectrum analyzers will allow for this type of connection.) The response should be at least 60 db down at the +/- 20 kHz points. If this test is passed as well, then the basic receiver is not at fault. Obviously if it fails one of these tests, do the appropriate repairs.

Another possibility is that some of that high power crud is getting into the front end of the receiver and generating spurious mixing products that mix with off channel signals and bring them into the bandpass. I'm assuming you're doing like most people and using only notch duplexers for the repeater. I'd try adding a pass cavity to the receiver side and see if that helps.

Finally, it may not be a repeater problem at all. It could be
that some local user types are running their rigs "all knobs
to the right" and generating very broad signals. You didn't
say whether the received signals were clear or not. If all
you're getting is buckshot, I'd start DFing some users with
bad radios after I'd determined the Micor receiver was operating
properly. (You don't see this problem too often with modern Japanese
equipment, but some of the older rigs were quite bad.)

Gary
--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1038. Re: AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-28 17:30:01 UTC
From: atd@cs.rit.edu
Message-ID: <1993Nov28.173001.11912@cs.rit.edu>
Source record: 119103

AM + FM = SSB with carrier works in the limit if the modulation index is low enough that only the first sideband of the FM is significant. Remember that FM has an infinite number of sidebands.

1039. 24 volt device on 12 volt

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-28 18:22:43 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <931129063552125@pubcon.fort-worth.tx.us>
Source record: 119107

my guess is that by lowering the voltage, you are also lowering the power output to the antenna. therefore, say if youre puttint out 100 watts, if all the power is reflected back in phase, you will have 200 watts total at the transistor. now, having said that, seeing that p=ExI, assuming the voltage is half of the original, if you use a device capable of handling 200 watts, it should be ok, but at the higher voltage, power is increased and therefor exceedes the power limitation of the device. that is my guess. as far as the differences between fets and bipolar devices, as i recall a bipolar is a current driven current output device. i dont think voltage will matter much in its operation unless it has a minimum operating voltage in the specs. the fet is a voltage controlled current supply divice so voltage could oops should not effect it either. thats my thinking, but im not an expert on transistors by a longshot. i had a hard time with that course. :) 73 wb5kxw

1040. sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-28 22:49:22 UTC
From: st92ba44@dunx1.ocs.drexel.edu
Message-ID: <CH84qA.3w2@Dunx1.OCS.Drexel.Edu>
Source record: 119106

Hello there.
I'm not sure if this is the right place to ask but the title seemed
appropriate (and I couldn't find a faq). Anyhows, I'm working on
a crystal shortwave radio which requires a t-50-2 toroid core onto
which the coil is wound. I'm wondering if a straight (bar) ferrite
core wouldn't achieve the same end. (Plus, I can't find the toroid
around here--I'm rather close to finishing it so ordering it would
most likely kill me :)
If the bar does work, could anyone give me a tip on how
many turns (of wire) it would need.
BTW, how well do the homemade radios work? Especially the crystal-diode kind.
Thanks.

---
antonio gatta
st92ba44@dunx1.ocs.drexel.edu

1041. MiniSport Laptop Hacker - Vol 17

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 03:41:28 UTC
From: bmork@opus-ovh.spk.wa.us
Message-ID: <T4BRDc4w165w@opus-ovh.spk.wa.us>
Source record: 119126

MiniSport Laptop Hacker - Vol 17, Nov 1993
Copyright (c) 1993 Brian Mork -- "not to make money, but to keep it that way for others, too."

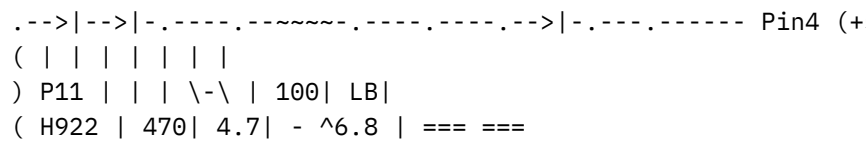
>>> ADMIN
Remember, you can get copies on disk of any software or text files (including the MLHacker series) I refer to by sending me a disk and SASE. I'll put a variety of other MLHacker related goodies on there, too. Alternately, contact me using the information in the signature block. Please, contribute!

MLHacker is available on the KA6ETB Internet HAM-Server. Send a message to ham-server@grafex.cupertino.ca.us with the single line of text: HELP to get access information. Check the \hamradio\newsletters directory. I'm watching for other Packet or Internet archivers who will host the MLHacker series.

>>> POWER SUPPLY
A lot of people have a problem where the computer fails to stay powered on. Two LEDs blink for a second or two and then the computer powers down. One of mine has been having this trouble, too, and I finally had a chance to reverse engineer the power supply.

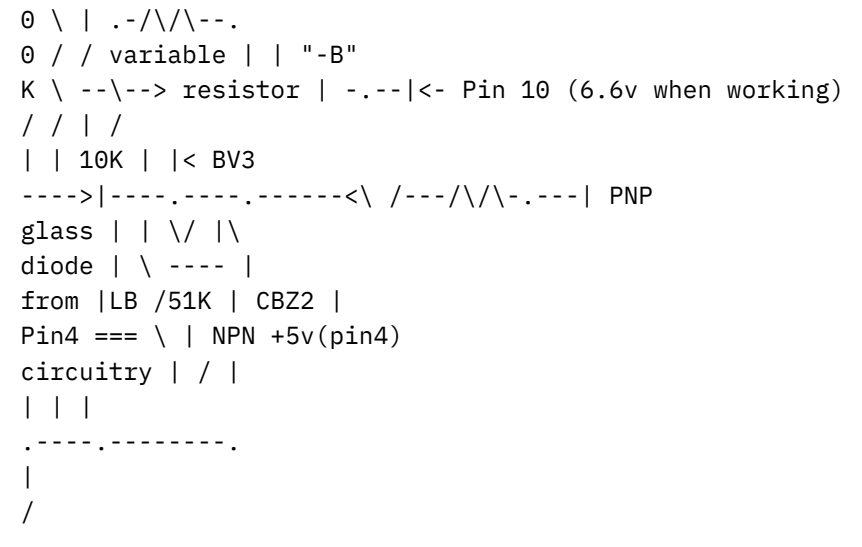
The Minisport power supply pinout to the motherboard is via a 16 pin mini scotchflex connector. Pin 1 is indicated by a white arrow on the power supply board. Reverse engineering was carried backward into the power supply only until I was reasonably sure I understood how the circuit was suppose to work. Notice some capacitors seem to be reverse biased. Surface mount dielectric capacitors still have the banded end negative, right?

Pins 2,5 and 6 are not accounted for yet because of unidentified components. Pins 5,6, and 10 are the ones with bad voltages either causing my problem or as a result of my problem. What a coincidence, eh? Here's what I've been able to determine. I'm particularly interested in what *your* header voltages are if you have this notorious power-off failure mode. These schematics are not a "sure thing" -- they're determined using visual trace following, an ohmeter, and a diode checker. I'm particularly unsatisfied with the Pin 10 circuitry. Other fixit experts out there, please give me ideas!



```
) xformer | === === |Znr | | |
( | | | + | | | |
| / / / | / /
| |
| .----->|---.----- Pin1 (+5v to only
.-- glass diode S487 | 2nd MB RAM)
to Pin10 ===
circuitry |LB
|
.----- Pin3 (GND)
|
/

A3 bobbin
.---------------------------->|---.---~~~---.----- Pin7 (+10v)
( | |
) G923 === ===
( P12 | |
) xformer / /
(
A3 bobbin
.------|<---.---~~~---.--------------------------- Pin8 (-10v)
( | + | |
) G923 === === ===
( P12 | 47 - | 3.3 LB |
) xformer / / /
(
.-- Pin11,13,14
|
| (GND)
/
608C04
.--. bobbin
| |----.-------~~~-------.----.---------------- Pin15,16 (+5v)
.--. | | |
.---. 100 | \-\
1000| | 0.1 === ^
=== === | |6.8v
| | | | Znr
.---. / /
| |
/ edge |14
MB3778 |----- Pin 9 (from computer)
| (_stby)|
MIDL -----------. center | |
| MB3778 |14
+5v(pin4) / 10k (_stby)|------------------ Pin 12 (from computer)
| \ |
| / |
1 / | 4.7K
```



MIDL is identified in MLH Vol 14 -- in essence, it is +9v power, delivered through a diode.

LP stands for "Little Beige capacitor." I'm guessing they're 0.01uf bypass capacitors. They have no markings.

In order to progress further, I need to know the identification of a few parts: "24" - 3pin rectangular SMC, 1/16" x 1/8"
"14" - 3pin rectangular SMC, 1/16" x 1/8"
"BV3" - 3pin rectangular SMC, 1/16" x 1/8"
"CBZ2" - 4tab SMC, looks like fixed volt reg (3 + tab)

Please provide feedback: * BBS 1-509-244-9260
* AX.25 KA9SNF@wb7nnf.#spokn.wa.usa
73, Brian * Internet bmork@opus-ovh.spk.wa.us

Brian Mork Internet bmork@opus-ovh.spk.wa.us
. . . . Amateur Radio (AX.25) ka9snf@wb7nnf.#spokn.wa.usa
... . .. USMail 6006-B Eaker, Fairchild, WA 99011

1042. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 14:32:42 UTC
From: zlau@arrl.org
Message-ID: <2649@arrl.org>
Source record: 119108

In rec.radio.amateur.homebrew, st92ba44@dunx1.ocs.drexel.edu (antonio gatta) writes:
>Hello there.
> I'm not sure if this is the right place to ask but the title seemed
> appropriate (and I couldn't find a faq). Anyhows, I'm working on
> a crystal shortwave radio which requires a t-50-2 toroid core onto
> which the coil is wound. I'm wondering if a straight (bar) ferrite

They are similar in that both are used to increase the inductance of a coil. However, type 2 iron powder of 10, while ferrite materials usually have a much higher permeability (though some VHF materials have a similar permeability). Ferrites typically have higher loss, though I've seen inductors wound on type 67 material with low loss. Many will have 1 to 2 magnitudes more loss. Ferrites are often less frequency stable.

You might consider replacing the coil with an air core inductor, which will also have low loss and probably even better frequency stability. A problem is the large field generated by air core inductors unless shielded--you can probably fine tune the circuit by waving your hand around it!

People have wound these on a cardboard form, though styrofoam would probably have a little less loss. Books such as the ARRL Handbook tell you equations for finding out the inductance of both toroidal and solenoidal inductors.

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

> core wouldn't achieve the same end. (Plus, I can't find the toroid
> around here--I'm rather close to finishing it so ordering it would
> most likely kill me :)
> If the bar does work, could anyone give me a tip on how
> many turns (of wire) it would need.

1043. QRP phone- ideas?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 15:45:41 UTC
From: peterson@ux1.cso.uiuc.edu
Message-ID: <2dd5f5$ko3@vixen.cso.uiuc.edu>
Source record: 119109

Does anybody have decent experience with a rig to do phone on QRP, something lightweight, low power? If there's anyone who's messed with this, please respond with some ideas on where I could build such a rig via e-mail. Thanks.
Andy N9NTI
--
We're just two lost souls swimming in a | If the University saw things my
fish bowl, year after year. Running over | way, they wouldn't raise tuition!
The same old ground, what have we found? | Andy Peterson, N9NTI /--/--/
The same old fears.. wish you were here.. | "I only do code in C." |

1044. Re: Upgrade to a Micor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 16:33:32 UTC
From: don@genroco.com
Message-ID: <1993Nov29.163332.22495@genroco.com>
Source record: 119110

In article <4eVJDc2w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
> ..... At our last executive meeting, I was
>told we've had a complaint that our "flagship" repeater has
>a front end so broad that it lets in calls 20 khz off-channel -
>this is well past the adjacent channel and getting into the
>deep woods. The VHF receiver is a Micor mobile, with the
>usual adaptions to repeater service. Is it possible to
>get some third-party upgrade filter to tighten the response
>a bit, and upgrade this - or should we start saving
>up for a commercially built repeater ?

Hi Bill,

Most MICOR units have very good front ends on them. However, there were some units that were built with a DVP unit that have a 24KHz passband in the IF. If you converted one of those units and did not modify the IF passband, then that could be your problem.

Donald D. Woelz, K9GR Office Phone: 414-644-8700
GENROCO, Inc. K9GR @WB9TYT.#MKE.WI.USA.NOAM
205 Kettle Moraine Drive North k9gr@k9gr.ampr.org [44.92.1.48]
Slinger, WI 53086 U.S.A. don@genroco.com

1045. W7EL's Optimized rig: saga continues

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 17:26:09 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <2ddbbh$b96@news.acns.nwu.edu>
Source record: 119111

This is as a follow up on my earlier tale of woe in which I mentioned the low VFO output. I thank all, including W7EL, who replied.

I replaced the FET and the VFO output came right up to 5vpp with the buffer output at 2.4vpp.

I replaced the receive section of W7EL's Optimized rig with Rick Campbell's R1. For a test, I hooked up an antenna and the oscillator (thru the buffer) to the SBL-1 mixer in the R1. The receiver seems quite insensitive. Only signals S7 or better were audible on the receiver. It is quite deaf.

On to more fun ...

Rajiv
aa9ch
r-dewan@nwu.edu

1046. Information

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-29 20:08:19 UTC
From: an53728@anon.penet.fi
Message-ID: <201414Z29111993@anon.penet.fi>
Source record: 119112

INFORMATIONAL REPORTS

- How to trick pay phones into thinking you deposited money

- How to clone cellular phones

- How to make traffic lights turn green by remote control

- How to build and use a bugging device

- How to make your electric meter go backwards

- How to get cable TV for free

- How to create your own pirate TV or radio station

$10 each, or all for $40. For informational purposes only. Send self-addressed, stamped envelope. Make checks or money orders out to Kardos.

Kardos
P.O. Box 2310
Darien, CT 06820
USA

To find out more about the anon service, send mail to help@anon.penet.fi.
Due to the double-blind, any mail replies to this message will be anonymized,
and an anonymous id will be allocated automatically. You have been warned.
Please report any problems, inappropriate use etc. to admin@anon.penet.fi.

1047. Re: AM+FM=SSB?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 02:56:48 UTC
From: alanb@sr.hp.com
Message-ID: <CHAAup.Asv@srgenprp.sr.hp.com>
Source record: 119113

Mike Butts (mbutts@netcom.com) wrote:
: In the ARRL's "Solid State Design for the Radio
: Amateur", by Hayward and DeMaw, on p. 184 of
: the 1986 edition, after a nice summary of
: filter and phasing principles, plus a mention
: of Weaver, they say:

: "Also, it may be shown mathematically that
: a carrier which is amplitude modulated
: properly and frequency modulated
: simultaneously will yield a single-
: sideband output."

: I haven't succeeded in figuring this out.
: Can someone show this mathematically or otherwise?

Assume the SSB signal is made up of a bunch of sine waves of different frequencies within the bandwidth of the SSB signal. You can combine any two of the sine waves to get a signal in the form of a modulated sine wave, with a different phase and frequency. For example, trig identities give:

```
sin(wt) + sin((w+delta)t) = 2 * cos((delta/2)t) * sin((w+delta/2)t)
^^^^^^^^^^^^^^^ ^^^^^^^^^^^^^^^^
modulation RF sine wave
```

If the two sine waves have different frequencies or phases, the expression looks a litle different, but you still get a modulated sine wave.

If you combine two modulated sine waves, you get a third modulated sine wave, again at a different frequency and with more complex modulation. And so on with all the rest of the frequency components of the SSB signal. The result is that any SSB signal can be represented as a single sine wave with a varying frequency and amplitude.

In other words, the SSB signal can be broken up into two components: an amplitude modulation and a frequency/phase moculation. It is possible to separate the two and modulate them separately. The technique is to hard-limit the SSB signal, which leaves you with the FM component only. You than amplify this signal, using non-linear class-C amplifiers for efficiency, up to the output amplifier stage. The AM component is recovered from the original SSB signal with a diode envelope detector. It is amplified and used to AM-modulate the final amplifier. The result is the original SSB signal.

Note that both the FM modulation and the AM modulation have DC components, so the modulators must be DC-coupled throughout.

: Has it ever been done in a real system?

I understand it has been done. The complexity is not really worth the increase in efficiency, expecially when you add the expense of a high-level DC-coupled AM modulator.

AL N1AL

1048. TMS32010

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 16:41:04 UTC
From: nat@kpc.com
Message-ID: <1993Nov30.164104.20293@kpc.com>
Source record: 119114

Hi,
Anyone know of a place where one could buy the TI TMS32010 DSP chip
in single quantities? Any idea how expensive this chip is? I know this
chip is at least 8 years old. My adviser in graduate school had a tms32010
system development kit from TI and I implemented many filters on it. While
we are on it does TI still sell the development kit for the tms32010 ? The
kit had a build in assembler and all you had to do was to download the
assembly code in ascii from a host machine. The development board intercepted
the incomming stream and assembled it on the fly. On the whole it was a neat
set up.
Thanks in advance.
Nat.
--

Natarajan Gurumoorthy AB6SJ Kubota Pacific Computer, Inc.
nat@kpc.com 2630 Walsh Avenue
Phone 408 987 3341 Santa Clara, California 95051.

1049. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 18:21:50 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CHBHos.ILA@cbnewsm.cb.att.com>
Source record: 119115

In article <2649@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, st92ba44@dunx1.ocs.drexel.edu (antonio gatta) writes:
>> I'm not sure if this is the right place to ask but the title seemed
>> appropriate (and I couldn't find a faq). Anyhows, I'm working on
>> a crystal shortwave radio which requires a t-50-2 toroid core onto
>> which the coil is wound. I'm wondering if a straight (bar) ferrite
>They are similar in that both are used to increase the inductance of a
>coil. However, type 2 iron powder of 10, while ferrite materials usually
>have a much higher permeability (though some VHF materials have a similar
>permeability). Ferrites typically have higher loss, though I've seen
>inductors wound on type 67 material with low loss. Many will have 1 to
>2 magnitudes more loss. Ferrites are often less frequency stable.

I was wondering about the differences between the various core types.
In some applications they call for T-50-2 and others they call for
T-50-6. A lot of times it looks like they are using what they have on
hand and you could subsitute a T-50-2 for a T-50-6 or vice versa.
Is the 2 or the 6 extender more of a indication of the amount of power
the toriods can handle? As I am just getting started in doing some
of my own homebrewing it would be nice to know that I can use a T-50-2
that I have on hand rather then having to wait for mailorder to show
up with a T-50-6. The applications I am working with are VFO's, output
filters and matching impedances. Could someone enlighten me on toriods?

73!

Jeff
--
Jeff Jones AB6MB | Vote out those who voted for the North American
jeffj@seeker.mystic.com | Free Trade Agreement!
Infolinc BBS 510-778-5929 |

1050. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 20:32:47 UTC
From: reichrt@rtsg.mot.com
Message-ID: <2dgalf$j4v@delphinium.rtsg.mot.com>
Source record: 119118

In article <CHBHos.ILA@cbnewsm.cb.att.com>, jeffj@cbnewsm.cb.att.com (jeffrey.n.jones) writes:
|> In article <2649@arrl.org> zlau@arrl.org (Zack Lau) writes:
|> >In rec.radio.amateur.homebrew, st92ba44@dunx1.ocs.drexel.edu (antonio gatta) writes:
|> >> I'm not sure if this is the right place to ask but the title seemed
|> >> appropriate (and I couldn't find a faq). Anyhows, I'm working on
|> >> a crystal shortwave radio which requires a t-50-2 toroid core onto
|> >> which the coil is wound. I'm wondering if a straight (bar) ferrite
|> >They are similar in that both are used to increase the inductance of a
|> >coil. However, type 2 iron powder of 10, while ferrite materials usually
|> >have a much higher permeability (though some VHF materials have a similar
|> >permeability). Ferrites typically have higher loss, though I've seen
|> >inductors wound on type 67 material with low loss. Many will have 1 to
|> >2 magnitudes more loss. Ferrites are often less frequency stable.
|>
|> I was wondering about the differences between the various core types.
|> In some applications they call for T-50-2 and others they call for
|> T-50-6. A lot of times it looks like they are using what they have on
|> hand and you could subsitute a T-50-2 for a T-50-6 or vice versa.
|> Is the 2 or the 6 extender more of a indication of the amount of power
|> the toriods can handle? As I am just getting started in doing some
|> of my own homebrewing it would be nice to know that I can use a T-50-2
|> that I have on hand rather then having to wait for mailorder to show
|> up with a T-50-6. The applications I am working with are VFO's, output
|> filters and matching impedances. Could someone enlighten me on toriods?
|>
|> 73!
|>
|> Jeff
|> -

The T-50-2 core usually provides highest unloaded Q in the Lower HF range while the T-50-6 aims at the upper HF range. The Inductance/Turn is different so
you shouldn't expect a direct substitution. These sound like the Amidon Toroids I use. They supply excellent data sheets with design information on how to wind/calculate inductance. Don't have their address with me but they advertise in most RF and HAM Radio magazines.

--

==
| Charles H. Reichert 708-632-6669 Work - MOTOROLA, INC Cellular |
| KD9JQ 708-358-3827 HOME - after 8PM CST weekdays |
| reichrt@rtsg.mot.com 955 Concord Ln. Hoffman Ests., IL. 60195 |
==

1051. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 21:00:24 UTC
From: steve@hicomb.hi.com
Message-ID: <steve-301193154406@brainiac.hi.com>
Source record: 119116

In article <CHBHos.ILA@cbnewsm.cb.att.com>, jeffj@cbnewsm.cb.att.com (jeffrey.n.jones) wrote:
> I was wondering about the differences between the various core types.
> In some applications they call for T-50-2 and others they call for
> T-50-6. A lot of times it looks like they are using what they have on
> hand and you could subsitute a T-50-2 for a T-50-6 or vice versa.
> Is the 2 or the 6 extender more of a indication of the amount of power
> the toriods can handle?

In T-50-2, the "T" presumeably stands for "toroid"; the "-50" is the outside diameter of the toroid; and the "-2" suffix is the iron-powder "mix", or type of core material. The mix determines the permeability (mu) of the toroid. The inductance of a coil wound on the toroid is directly affected by the permeability of the core material - I think it's a linear dependence, but I don't remember exactly.

Also, some core types are more temperature stable, or have different saturation limits, etc, so even if the permeability matches, a different core type might not work satisfactorily.

In FT-50-77, the "FT" presumably stands for "ferrite toroid".

I suggest contacting a toroid manufacturer such as Amidon for a catalog.

Steve Byan internet: steve@hicomb.hi.com
Hitachi Computer Products (America), Inc.
1601 Trapelo Road phone: (617) 890-0444
Waltham, MA 02154 FAX: (617) 890-4998

1052. Re: Upgrade to a Micor

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-11-30 23:05:40 UTC
From: millar@nhqvax.sanders.lockheed.com
Message-ID: <millar.66.00121363@nhqvax.sanders.lockheed.com>
Source record: 119117

In article <4eVJDc2w165w@inqmind.bison.mb.ca> bills@inqmind.bison.mb.ca (Bill Shymanski) writes:
>From: bills@inqmind.bison.mb.ca (Bill Shymanski)
>Subject: Upgrade to a Micor
>Date: Wed, 24 Nov 93 20:57:50 CST

>Never volunteer to be on the technical comittee of a repeater
>club unless you have some idea of what's involved:
> Anyway....I'm a member of a repeater group that is currently
>involved in interconnecting repeater sites in several spots
>in southern Manitoba. At our last executive meeting, I was
>told we've had a complaint that our "flagship" repeater has
>a front end so broad that it lets in calls 20 khz off-channel -
>this is well past the adjacent channel and getting into the
>deep woods. The VHF receiver is a Micor mobile, with the
>usual adaptions to repeater service. Is it possible to
>get some third-party upgrade filter to tighten the response
>a bit, and upgrade this - or should we start saving
>up for a commercially built repeater ?
>(And is this problem related to the fact that the repeater is
>on a CBC broadcast tower with 100,000 watts of various
>broadcast transmitters on it ?)
> Bill

>bills@inqmind.bison.mb.ca-
>The Inquiring Mind BBS, Winnipeg, Manitoba 204 668-8845

Hi Bill...

We use a Micor on 450 here and it appears to work well...but the adjacent channels are 25 kHz. I agree with the previous suggestions and add one of my own. Look at the preamplifier. Many of the GaAs fet types with tuned outputs have upwards of 20 db gain. This isn't necessary and degrades the intermodulation susceptability of the overall receiver. Our repeater uses a preamp with a resistivly loaded output that has about 10 db gain...which is more than sufficient to lower the system noise figure to close to the preamp's level.

jeff

The views expressed here are my own, not my employer's.
Jeff Millar, WA1HCO, Lockheed Sanders 603-885-7047

1053. Re: TMS32010

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 06:05:58 UTC
From: cpuig@infoserv.com
Message-ID: <931130.220558.3u1.rusnews.w165w@cpuig.infoserv.com>
Source record: 119119

nat@kpc.com (Natarajan Gurumoorthy) writes:

> Anyone know of a place where one could buy the TI TMS32010 DSP chip
> in single quantities? Any idea how expensive this chip is?

My year-old Newark Electronics catalog lists various TMS320C10 versions (differing in speed and packaging) ranging from $9.70 to $11.55 in single quantities. Newark accepts credit cards, subject to a $25 minimum order. Call their Chicago HQ at (312) 784-5100 to find the sales office nearest you. Newark has dozens of offices throughout the US.

The Newark catalog also lists the TMS320C15, TMS320E17, TMS32020, TMS320C25, and TMS320C26.

--
Carlos Puig, KJ6ST cpuig@infoserv.com Campbell, CA

1054. Telephone Interface Circuit ?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 09:53:17 UTC
From: itbkl@puknet.puk.ac.za
Message-ID: <itbkl.11@puknet.puk.ac.za>
Source record: 119120

Hi.

I am looking for examples of circuits that will allow me to interface any audio based equipment (say a PC's soundblaster card or audio from HF rig, etc.) to the telephone line.

The circuit should have all the lightning protection, isolation, etc. that is sufficient for the Telco to pass an acceptance test.

I have in mind a circuit with the following interfaces :

a) connection to telephone line.
b) audio out
c) audio in.
d) ring detect (say 5v out = ring)
e) go off-hook (say +5V means the circuit goes off-hook and puts the audio through).

I am shure there must be some circuits available somewhere ? What do you guys use for phone patching ? (Not legal over here).

Thanks.

Please send any replies via Email.

Keith
ZS6TW

1055. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 15:14:23 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <2diccf$4tm@news.acns.nwu.edu>
Source record: 119121

In article <CHBHos.ILA@cbnewsm.cb.att.com>,
jeffrey.n.jones <jeffj@cbnewsm.cb.att.com> wrote:

>I was wondering about the differences between the various core types.
>In some applications they call for T-50-2 and others they call for
>T-50-6. A lot of times it looks like they are using what they have on
>hand and you could subsitute a T-50-2 for a T-50-6 or vice versa.
>Is the 2 or the 6 extender more of a indication of the amount of power
>the toriods can handle? As I am just getting started in doing some
>of my own homebrewing it would be nice to know that I can use a T-50-2
>that I have on hand rather then having to wait for mailorder to show
>up with a T-50-6. The applications I am working with are VFO's, output
>filters and matching impedances. Could someone enlighten me on toriods?
>

A good place to start is the ARRL Handbook. Amidon catalog also has
lots of useful information.

Here is a comparison of #2 and #6 powdered iron core mixes:

#2 #6
permeability 10 8 so a #6 toroid needs more turns
temp stability (ppm/c) 95 35 if #6 can be used, then preferred for vfos
preferred freq range 2-10MHz 10-20Mhz the big reason to pick different ones
usable range .2-30MHz 10-50Mhz

So for 160-40m I would pick #2 mix. For 30m-10m bands, I would pick
the yellow #6 mix.

Some one did mention that ferrites have higher losses than powdered
iron cores. An important corollary is that coils wound on powdered iron cores
have higher Q than ones on ferrite cores (despite needing more turns).
Consequently, powdered iron cores are preferred for tuned circuits such
as vfo tanks, input/output tanks on rf amplifiers, antenna tuning units
etc. On the other hand, the lower Q of the ferrite lends itself to
broad band applications such as antenna baluns, broadband transformers
as in tanks for wide bandwidth amplifiers and rf chokes.

Rajiv
aa9ch
r-dewan@nwu.edu

1056. 304 AM Transmitter-HELP!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 18:49:41 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec01.184941.65274@yuma.ACNS.ColoState.EDU>
Source record: 119122
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

I have an AM transmitter using 304's for the modulator and the final.
I've been told it was built by Phil, KD7EB, who has gone to his reward.
I'm not sure I have all the parts, but I'd like to get it lit up and
running. Any help or references anyone can provide would be helpful.

I'm also looking for the addresses of:

'AM Press Exchange' and 'Electric Radio' magazines, as I was pointed
in theses directions also.

No, the modulation transformer is not for sale,
Galen, KF0YJ

1057. Anybody try building ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 20:24:55 UTC
From: tavernin@rm1.interlan.com
Message-ID: <CHDI1J.EMx@rd1.InterLan.COM>
Source record: 119123

Has anybody tried to build the amplifier based on the Motorola MTP3055E
that's described in Doug DeMaw's QRP book (pages 171-172)!?

It gives you ~20 watts out with 1 watt in ...

Seems really simple and neat ... and the MTP3055E is less than $1!

Also, does anyone have any other pointers to articles describing small HF
amplifiers, that are inexpensive?

Thanks,

Victor Tavernini
Racal-Datacom, Inc.

tavernin@sun1.interlan.com

1058. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-01 21:02:22 UTC
From: der@atl.hp.com
Message-ID: <2dj0ou$19t@hpuerca.atl.hp.com>
Source record: 119124

antonio gatta (st92ba44@dunx1.ocs.drexel.edu) wrote:
: Anyhow, I'm working on
: a crystal shortwave radio which requires a t-50-2 toroid core onto
: which the coil is wound. I'm wondering if a straight (bar) ferrite
: core wouldn't achieve the same end.

In addition to the potential differences in the composition of the ferrite material, I suspect that you could also run into coupling problems between coils (one of the advantages of toroids is that they are largely self-shielding). Of course, I could be toroidally confused.... Have you looked at sources such as The Radio Amateur's Handbook for this info?

So the answer, as is often the case w.r.t. Usenet inquiries is

It Depends.

-- Dave Ritchie N4DJS
der@hprc.atl.hp.com

Disclaimer: Just another attempt to improve my typing speed.

1059. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 01:26:09 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CHDvzp.JDB@cbnewsm.cb.att.com>
Source record: 119125

In article <2diccf$4tm@news.acns.nwu.edu> rdewan@casbah.acns.nwu.edu (Rajiv Dewan) writes:
>A good place to start is the ARRL Handbook. Amidon catalog also has
>lots of useful information.
>
>Here is a comparison of #2 and #6 powdered iron core mixes:
>
> #2 #6
>permeability 10 8 so a #6 toroid needs more turns
>temp stability (ppm/c) 95 35 if #6 can be used, then preferred for vfos
>preferred freq range 2-10MHz 10-20Mhz the big reason to pick different ones
>usable range .2-30MHz 10-50Mhz
>
>So for 160-40m I would pick #2 mix. For 30m-10m bands, I would pick
>the yellow #6 mix.
>
>Some one did mention that ferrites have higher losses than powdered
>iron cores. An important corollary is that coils wound on powdered iron cores
>have higher Q than ones on ferrite cores (despite needing more turns).
>Consequently, powdered iron cores are preferred for tuned circuits such
>as vfo tanks, input/output tanks on rf amplifiers, antenna tuning units
>etc. On the other hand, the lower Q of the ferrite lends itself to
>broad band applications such as antenna baluns, broadband transformers
>as in tanks for wide bandwidth amplifiers and rf chokes.

Thanks for the really good answer! This explains alot to me and I'll
be able to make good use of it! 73!

Jeff

--
Jeff Jones AB6MB | Vote out those who voted for the North American
jeffj@seeker.mystic.com | Free Trade Agreement!
Infolinc BBS 510-778-5929 |

1060. Building a 2m/70cm mobile antenna

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 04:10:15 UTC
From: Rich.Wacaser@launchpad.unc.edu
Message-ID: <2djpr7$eol@samba.oit.unc.edu>
Source record: 119127
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.homebrew

Greetings:
I'm kinda new to Ham Radio and am usually
broke as well. Does anyone have any ideas
or plans to build a *cheap* dual band antenna
for 2m/70cm to mount on a truck bumper?

I'm using a Yeasu FT-727 and will probably
be building the 2m amplifier in the Nov.
issue of 73 magazine.

Any comments, suggestions, warnings, plans,
diagrams, etc... will be appreciated.
Responses may be e-mailed to:
a10rxw1@hayek.cob.niu.edu

73 de KF9QQ
-Rich-

--
The opinions expressed are not necessarily those of the University of
North Carolina at Chapel Hill, the Campus Office for Information
Technology, or the Experimental Bulletin Board Service.
internet: laUNChpad.unc.edu or 152.2.22.80

1061. Re: 2M 10w amp?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 06:03:52 UTC
From: drew@trl.oz.au
Message-ID: <drew.89.0@trl.oz.au>
Source record: 119128

In article <CH1q8E.BCu@mentor.cc.purdue.edu> blumb@sage.cc.purdue.edu (Bill Blum) writes:
>From: blumb@sage.cc.purdue.edu (Bill Blum)
>Subject: 2M 10w amp?
>Date: Thu, 25 Nov 1993 11:50:38 GMT
>Well, I have a choice.
>
>I can either shell out the $$ to buy a 2m amp for my HT, or I can buy a
>theory book, learn theory, and build one.
>
>Recommendations either way?
>
>--
>Bill Blum N9VLS blumb@sage.cc.purdue.edu Purdue University, W. Lafayette, IN
>Reality is for those who can't handle subscribing to IASFM and Model Railroader

Bill, get a copy of Motorola's "RF Device Data Manual" Vols I and II.
Includes many great Application Notes by Motorola Engineering staff.

Kind Regards, Drew, VK3XU Telecom Australia Research Laboratories.

1062. Re: Telephone interface circuit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 13:31:59 UTC
From: jennings@eng115.rochny.USpra.abb.COM
Message-ID: <9312021331.AA00280@nms1.abb.com>
Source record: 119130

> I am looking for examples of circuits that will allow me to interface any
> audio based equipment (say a PC's soundblaster card or audio from HF rig,
> etc.) to the telephone line.
> .
> .
> .
> .
> Thanks.
> .
> .
> .
> Keith
> ZS6TW

Keith,

Try CTS Knight. They have a telephone interface which is FCC type accepted. I don't remember the address, but maybe some one out it internet land will.

Good luck and 73

TJ, kv2x

--

|
Thomas J. Jennings | Tel: (716) 273 7071
Development Engineer | Fax: (716) 273 7262
|
ABB Process Automation |
Post Office Box 22685 |
Rochester, New York 14692-2685 |
|

Internet: jennings@jennings.rochny.uspra.abb.com

1063. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 14:34:00 UTC
From: lkollar@nyx10.cs.du.edu
Message-ID: <1993Dec2.143400.16392@mnemosyne.cs.du.edu>
Source record: 119129

A partially-related question -- does Amidon, or any reseller, sell a pre-packaged assortment of the most commonly-used toroids? All these different types are CONFUSING to the homebrewer wanna-be -- and from what I've read here, you can't count on color-coding to keep them straight....

It seems the hardest part of homebrewing these days is figuring out which parts you need then finding them. There's a business opportunity for those who know what they're doing -- it costs more than $5 to start, but you won't go to jail either. :-)

P.S. Nobody answered my question about using a magnetron from a micro-wave oven in osc/amp circuits. I'm not asking you to do all the work for me, but pointers to available articles would be appreciated.

Thinking about winding my coils on Quaker Oats canisters (just like Grandpa used to!), I am --
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think every ham
lkollar@nyx.cs.du.edu | should have to learn it.
"On the Internet, nobody knows you're a dog."

1064. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 15:29:28 UTC
From: rdewan@casbah.acns.nwu.edu
Message-ID: <2dl1ko$30s@news.acns.nwu.edu>
Source record: 119131

In article <1993Dec2.143400.16392@mnemosyne.cs.du.edu>,
Larry Kollar <lkollar@nyx10.cs.du.edu> wrote:
>
>A partially-related question -- does Amidon, or any reseller, sell a
>pre-packaged assortment of the most commonly-used toroids? All these
>different types are CONFUSING to the homebrewer wanna-be -- and from
>what I've read here, you can't count on color-coding to keep them
>straight....
>

Try
Dan's Small Parts
Danny Stevig KA7QJY

He advertises regularly in the QST's classified section.

Rajiv
aa9ch
r-dewan@nwu.edu

1065. Re: TMS32010

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-02 23:43:49 UTC
From: raichel@HAN.Paramax.COM
Message-ID: <CHFLx1.BM3@HAN.Paramax.COM>
Source record: 119132

TI has a DSP Starter Kit that includes a TMS32026 (a 320 with 1.5
k on chip ram, and some ROM), a 14 bit A2D and 14 bit D2A codec, and a
serial port all on a 2x3" board, and a simple assembler and debugger,
all for $99!!! At that price I had to get one, so I ordered it, and
I am now playing with it. All that I had to do to get it working was to
build a standard PC serial cable, and connect a standard 9V AC cube
transformer, and load the software on my PC, and started playing!

I bought mine from ARROW, a major electronics distributer. They
are available from other TI suppliers. I forgot the part number and the 800
number for ARROW... Hopefully this will help..
Thanks
alan

Name: Alan Raichel If you think the answer is simple,
Call: N3IKI then you probabaly don't understand
Inet: raichel@han.paramax.com the question.
ICBM: 39'10' N 76'30' W #include <std_disclaimer.h>

1066. Re: sw-radio coils...question.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-03 14:42:30 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec3.144230.16456@ke4zv.atl.ga.us>
Source record: 119135

In article <1993Dec2.143400.16392@mnemosyne.cs.du.edu> lkollar@nyx10.cs.du.edu (Larry Kollar) writes:
>
>P.S. Nobody answered my question about using a magnetron from a micro-
> wave oven in osc/amp circuits. I'm not asking you to do all the
> work for me, but pointers to available articles would be appreciated.

There was an article in 73 Magazine a year or so back about a fellow who was injection locking a microwave oven magnetron to act as a high power FM FSTV transmitter. Like an automotive battery charger, the PS in microwave ovens is deceptively simple. The transformer is made intentionally lossy, and operated near saturation, in order to provide protection for the tube in case of flashover or poor cavity SWR due to things like using metal in the oven. It's also only halfwave rectified and poorly, if at all, filtered. You have to build a fairly sophisticated HV supply if you want clean signals while protecting the tube from transient overcurrent. That's the toughest part of using magnetrons.

Gary

--
Gary Coffman KE4ZV | Where my job's going, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | I don't know. It might | uunet!rsiatl!ke4zv!gary
534 Shannon Way | wind up in Mexico. | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -NAFTA Blues |

1067. Request for Johnson mods

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-03 14:46:43 UTC
From: davidk@merlin.dev.cdx.mot.com
Message-ID: <1993Dec3.144643.5524@merlin.dev.cdx.mot.com>
Source record: 119133

Hammering away at the license upgrade and picked
up a Johnson Ranger to get ready for the big day.
If you have mods for the Ranger please forward them to
me. Also if you have any suggestions for this rig I
appreciate knowing about them.

Thanks: Davidk xx1xxx <<<<< 2 1/2 weeks and ticking slowly.

1068. Slow Scan TV on a C= Amiga computer.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-03 16:11:15 UTC
From: ed92mdw@brunel.ac.uk
Message-ID: <CHGvMr.6ro@brunel.ac.uk>
Source record: 119134

Well, my Dad has asked me if he can use my Amiga with it's new digitiser
(Vidi-Amiga 12) to send Slow-Scan TV pictures over the airwaves.

At the moment he's using my old Sinclair Spectrum, but the Amiga can
produce nicer looking graphics and doesn't take five minutes to load
the program and another couple of minutes to load a picture from tape.
You can get Spectrum emulators for the Amiga, but there's no mic socket
on the Amiga to use with the program!

Anyway, any information on programs, any circuits etc.. appricated such exists -
I don't know whether I'll fully understand it but I sure my Dad will.

Thanks,

- Matt.
+---------------------------------+
"It's not fair to have the | Matthew Wilson, BA2 D&T with Ed.|
same rules for everybody | Brunel University (Runnymede), |
when we're all different." | Egham, Surrey, England. |
+---------------------------------+

1069. Info Request. Amateur Radio <->PC

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-03 19:26:19 UTC
From: M.Leizaola@bradford.ac.uk
Message-ID: <1993Dec3.192619.19555@bradford.ac.uk>
Source record: 119137

A friend of mine has asked me to forward this messages.

Please reply to him via e-mail.
sert91sb@va.anglia.ac.uk

---
could you please send me a rough design of the amateur radio and if
possible how can I do the data transmission between two PCs using rhese
amateur radios...

siva

1070. Trunk 900Mhz > ham bands???

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-03 22:22:50 UTC
From: ah6542@ehsn2.cen.uiuc.edu
Message-ID: <2doe7q$e49@vixen.cso.uiuc.edu>
Source record: 119136

Hello everyone,

I had a little question,
has anyone ever tuned-down a trunked radio
(business bands up in 900MHz) to the ham bands??
A friend of mine recently recieved an old one
that had a bad battery pack (but they didn't realize).
It is an old Motorola that is very nice on the inside,
it is very modular etc. -along w/ dials and things to
change stuff w/.

Ever hear of this being done???

TNX! et 73's
Allen Hall n9rzc@uiuc.edu

ps- e-mail appreciated (can't always get to the posts)

1071. sw-radio coils...question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-04 06:03:47 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <931204075948151@pubcon.fort-worth.tx.us>
Source record: 119138

i dont think the bar would achieve the same results as the toroid would in that much of the magnetic flux on a bar type core is outside the core itself, whereas the flux remains virtually all in the toriod type core. 73 wb5kxw

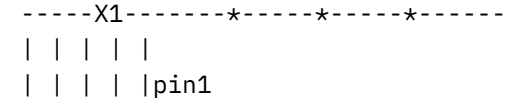
1072. Project 11: 15M QRP xmtr

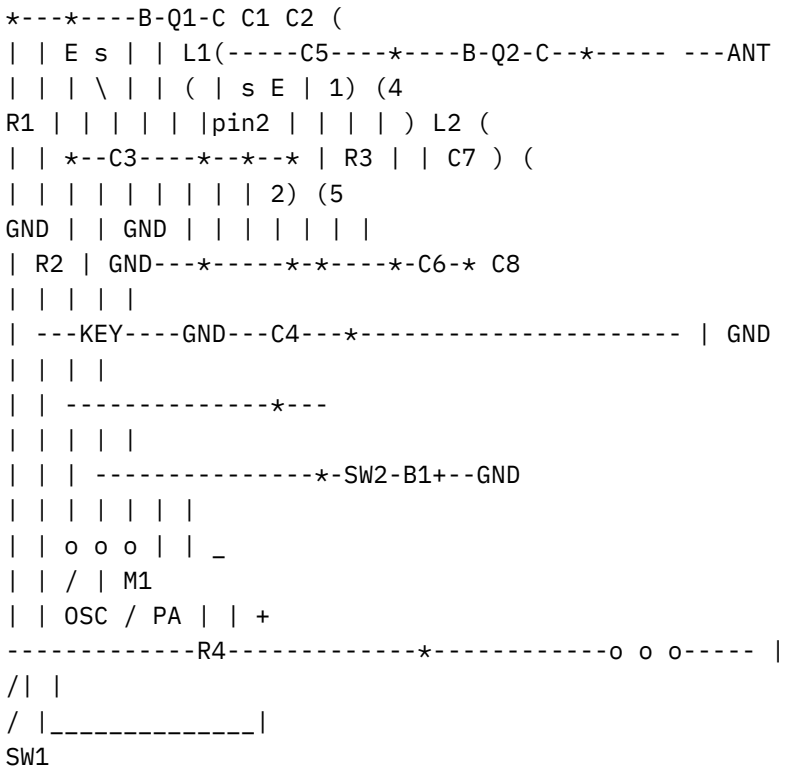
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-05 01:28:57 UTC
From: jherman@uhunix.uhcc.Hawaii.Edu
Message-ID: <CHJG49.Dyu@news.Hawaii.Edu>
Source record: 119139

Here's a two transistor 15 meter xmtr gotten from Bert Simon's book 104 HAM RADIO PROJECTS (1968). Bert says: "As any novice knows, 15 meters is where the action is, at least if you're a DX addict. So, imagine the fun in telling your 1000-mile contact that you're running less than 1-watt into a 2-transistor rig. It is important that you use a miniature 5-prong coil form for L1. Follow the directions in the parts list to the letter. L2 is wound over the lower turns of L1, using the same coil form pin connections. As you can see in the schematic, the 40-meter crystal oscillator output is tripled to 15 meters.
"Tuneup is simple. Depress the key (intermittently to avoid damaging Q1-Q2), noting the meter reading. It should be 5-8 ma. (If it isn't, adjust C1 until this range is reached). Switching to the other meter position (PA), adjust C1 for maximum. Using an output bulb (neon or #49) adjust C8 for minimum capacitance. Now tune C7 for a meter dip to about 4.5 ma. While dipping C7, tune C8 for maximum bulb brilliance."

Parts List

Q1 2N247 PNP transistor
Q2 2N372 PNP
C1,7 15 pf variable capacitor
C2 10 pf variable
C3,4,5,6 .001 mf
C8 50 pf variable
R1 10K resistor
R2 180 ohms
R3 3.6K
R4 51K
B1 12VDC battery
L1 Use 5 prong miniature coil form; 15 turns #20 insulated wire, tapped at 3 3/4 turns from the bottom. Top of coil should be connected to pin 1 of the base, bottom to pin 2, tap to pin 3.
L2 Wound over L1 in same manner to same connections as above; 15 turns #20 insulated wire with a 4 3/4 turn link. One side of link goes to pin 4.
X1 7 MHz 3rd overtone crystal
M1 0-10 DC milliammeter
SW1 DPDT
SW2 SPST





Notes: Q1 and Q2 have a marking (s) on the schematic which appears
to be the case of the transistor - on both cases (s) goes to ground.
The numbers next to L1 and L2 are the pin numbers of the coil form.
The wiring for SW1: If 3 or more wires meet without the junction
symbol * then there is a `jump' (no connection). The positive
terminal of B1 goes to ground.
The usual warning applies here as with the other 9 transmitters:
these circuits are old - tighter emission standards are in effect
now that weren't when these were first published; make sure you
signal is `clean' by applying proper filtering if necessary.
.... .- ...- . ..-. ..- -.

Jeff NH6IL (ex: WA6QIJ)
Jeffrey Herman, University of Hawaii Department of Mathematics
jherman@hawaii.edu jeffrey@math.hawaii.edu

1073. reply to using magnetron

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-05 20:05:29 UTC
From: brian.oakley@pubcon.fort-worth.tx.us
Message-ID: <931206064151158@pubcon.fort-worth.tx.us>
Source record: 119140

your solution may be the answer to my comment. i read an article that addressed using microwave magnetrons and it was stated that those should be avoided because of very unstable oscillation frequency. that they were made to heat, not to be stable. any info would serve to make me wiser im sure :)
please feel free. i dont know a lot about mw yet but im learning :). 73 wb5kxw

1074. interference problem?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-06 03:27:35 UTC
From: st92ba44@dunx1.ocs.drexel.edu
Message-ID: <CHLG9z.Czz@Dunx1.OCS.Drexel.Edu>
Source record: 119143

Hello again,
(I'm the guy who started the sw-coils thread). A rather kind
individual from around my way sent me the coil a few days after
that posting. I put my radio together and it worked great
(relatively). However, in moving it to a more permanent state (a
small metal project box I picked up at my local radio shack) something
has managed to foul things up. The other night, after finishing the
radio, I hooked it up to a 12V power suppply and wired the antenna
post to a large iron beam that supports my back porch (I don't have a
shortwave antenna yet...I was just curious). The thing picked up
some sort of french canadian news show (they were speaking french
and I heard the word "canada" in it...it was around 8-9pm). At
this point I have a giant smile on my face--my first radio is complete!
This morning I picked up the box at radio shack and put
my board in it. (Here's the problem) I went out and wired the thing
EXACTLY the same....nothing. I couldn't pick up a thing; not even
the french/canadian station. Needless to say I'm rather depressed.
So, before I pull the thing apart and hunt the problem down, I'm
wondering if it isn't the box. It is entirely metal. All of my wires
(headphone jack, volume control and tuner) cross the top of the circuit
board (they didn't last night). Everything is a little closer together
Now I realize I don't have the best of antenna's; but is that the
reason why its not getting anything? Shouldn't I *still* get that
french show? Basically, am I getting internal interference?
Any help would be *much* appreciated. Thanks for reading the
whole thing. :)

---
antonio gatta
st92ba44@dunx1.ocs.drexel.edu

1075. Re: W7EL's Optimized rig: saga continues

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-06 04:10:38 UTC
From: rohrwerk@orac.holonet.net
Message-ID: <CHLI9r.EoE@iat.holonet.net>
Source record: 119142

rdewan@casbah.acns.nwu.edu (Rajiv Dewan) writes:

>This is as a follow up on my earlier tale of woe in which I mentioned
>the low VFO output. I thank all, including W7EL, who replied.

<stuff deleted>

>I replaced the receive section of W7EL's Optimized rig with Rick Campbell's
>R1. For a test, I hooked up an antenna and the oscillator (thru the
>buffer) to the SBL-1 mixer in the R1. The receiver seems quite
>insensitive. Only signals S7 or better were audible on the receiver. It
>is quite deaf.

>Rajiv
>aa9ch

1) You sure that's enough oscillator drive?

2) I'm suspicious of that series-pick-off approach to TR switching. I
built up the 160 meter transverter from the 1988 ARRL Handbook, and was
very dissatisfied with the loss. Now I don't need it because of the way I
hooked it to the rig, but when I built up a little 40m transmitter, I
used diode TR switching.

John K0JD

1076. MORE POWER PLEASE

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-06 14:13:17 UTC
From: thweatt@rtsg.mot.com
Message-ID: <thweatt.755187197@mustang18>
Source record: 119141

I was reviewing an article this weekend which explained how to make
a simple FM transmitter. The circuit took the signal from a mic and
amplified it using an op-amp which would then be sent to a tank circuit.
The output of the tank circuit would then go out to the antenna.

The question is: How would you increase the transmitting power and how
would you control the output power? The frequency of this transmitter was
between 90 to 120 MHz. What would you need to do differently if the freq.
increased or decreased? I would like to see other, maybe better ways to
design FM, AM, SSB transmitters, by first guess is the ARRL handbook is the
best place to start.

Thanks,
John Thweatt

1077. Manual for Navy CR1-43044/TBY-8, Colonial Radio

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 01:34:37 UTC
From: russm@cascade.ens.tek.com
Message-ID: <2e0mjd$fa3@cascade.ens.tek.com>
Source record: 119145
Cross-posted to: rec.radio.amateur.equipment,rec.radio.amateur.homebrew

I have the following and am looking to fire it up. A manual would
be most helpful. Willing to pay copying and mailing charges.

Type CR1-43044
A unit of TBY-8 Radio
Navy Dept. - Bureau of Ships
Colonial Radio Corp., Buffalo NY
Contract NXSR377099

Thanks, Russ N7DHK (ex WA9SSR)

+--+
| Russell D. Mickiewicz (503)627-3455 Internet: r.mickiewicz@tek.com |
| Tektronix Telecomm Services 50-454, P.O. Box 500, Beaverton, OR 97077 |
+--+

1078. WANTED: Yaesu XF-455MC CW filter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 05:02:41 UTC
From: fmitch@netcom.com
Message-ID: <fmitchCHnFCI.C4M@netcom.com>
Source record: 119144
Cross-posted to: rec.radio.swap,rec.radio.amateur.homebrew

hi, mitch wa4osr here in mobile, alabama...

i am looking for a yaesu xf-455mc cw filter... if you have one you want
to sell please email me or contact me at the telephone numbers below...

thanks,
mitch
--
---
fmitch@netcom.com
Felton "Mitch" Mitchell, WA4OSR in Mobile, Alabama USA
205-342-7259 home, 205-476-4100 work, 205-476-0465 FAX
co-sysop for W4IAX bbs running fbb ... sysop for WA4OSR DXCluster in Mobile..

1079. Kenwood HT Batteries - homebrew charger

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 15:36:35 UTC
From: biocca@csg.lbl.gov
Message-ID: <35923@dog.ee.lbl.gov>
Source record: 119153

I'm considering building a charger for the TH-78a batteries. There appears to be some circuitry between the bottom charge connection and the battery - perhaps a diode or thermistor. Has someone already figured out what it is?

I'm looking at the Maxim fast charging chip that uses negative delta voltage shutoff. What technology does Kenwood use in their charger?

Thanks,

Alan
WB6ZQZ
AKBiocca@lbl.gov

1080. AM & SW antennae for $5 , Great for Superradio III !

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 16:43:36 UTC
From: copeland@metronet.com
Message-ID: <CHoBsp.HBH@metronet.com>
Source record: 119148
Cross-posted to: rec.radio.amateur.antenna,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.shortwave

I finally found a cheap solution for an AM antennae for my Superradio III.

In the September 1993 issue of Monitoring Times on page 100 is an
article on how to make passive and active AM antennaes.

It has a picture of a small PC board to make the active antennae.
It boosts antennae gain 10db. The author will sell the blank PC boards
for $3.50 + $1.50 for shipping.

The address is:

FAR Circuits
18N640 Field Court
Dundee, IL 60118

If you want a copy of the article, I can e-mail you the two pages in
GIF or TIF format. Send request to copeland@feenix.metronet.com

Newsgroups: rec.radio.amateur.antenna,
rec.radio.amateur.equipment,
rec.radio.amateur.homebrew,
rec.radio.shortwave
Subject: AM & SW antennae for $5
Summary:
Expires:
Sender:
Followup-To:
Distribution: world
Organization: Texas Metronet, Internet for the Individual 214-705-2917 (info)
Keywords:
Cc:

I finally found a cheap solution for an AM antennae for my Superradio III.

In the September 1993 issue of Monitoring Times on page 100 is an
article on how to make passive and active AM antennaes.

It has a picture of a small PC board to make the active antennae.
It boosts antennae gain 10db. The author will sell the blank PC boards
for $3.50 + $1.50 for shipping.

The address is:

FAR Circuits
18N640 Field Court
Dundee, IL 60118

If you want a copy of the article, I can e-mail you the two pages in
GIF or TIF format. Send request to copeland@feenix.metronet.com

1081. Help me on Knw - diodes of config.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 17:14:41 UTC
From: avale@bart.inescn.pt
Message-ID: <CHoD8I.9u@animal.inescn.pt>
Source record: 119152

Hello,

I have one Kenwood TR751E all mode 2m, and I need use the
tone encoder TU-7 that I already have.
In the schematic and tecnical manual do not refer what to do with the config.
diodes D3, D4, D5, D6 and D7 on the Control Unit. What are the individual funcion
of each other. The D14 is on the owner manual and is to config. the step, but
the others!? I only need to inform the unit that he has the TU-7 installed.

If anyone of you have this kind of information, or the email/internet of Kenwood,
I will thank you a lot.

73, Antonio (CT1DZY) E-mail: avale@bart.inescn.pt

1082. 94 MHz L.O./ Case Ground???????

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 17:18:04 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec07.171804.12013@yuma.ACNS.ColoState.EDU>
Source record: 119149
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment

I'm building a 94 MHz Local Oscillator, and the transistor has a case ground pin. Should I ground it or cut it off? It's an NPN transistor in a TO-72 case (little metal can).
Many thanks,
Galen, KF0YJ

1083. (none)

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 17:19:17 UTC
From: michaelbl@comm.mot.COM
Message-ID: <9312071719.AA03990@cradap05>
Source record: 119150

Re: WX decoder?
I'm looking for info on a simple decoder for Weather Teletype. The local skywarn group apparently echos the satelite transmissions on 2M. I would like to build a simple decoder for the HT to feed my pc serial port. I heard the data format was one of the old 300 baud modem formats. Can anyone fill me in on the details?

Thanks in advance...
N9TSI
michaelbl@ecs.comm.mot.com

1084. Re: Kenwood HT Batteries - homebrew charger

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 17:53:53 UTC
From: kharker@bnr.ca
Message-ID: <2e2fvh$2vk@crchh941.bnr.ca>
Source record: 119147

In article <35923@dog.ee.lbl.gov>, biocca@csg.lbl.gov (Alan K Biocca) writes:
|> I'm considering building a charger for the TH-78a batteries. There
|> appears to be some circuitry between the bottom charge connection
|> and the battery - perhaps a diode or thermistor. Has someone already
|> figured out what it is?

My guess is that it is a diode to prevent external shorts of the battery.
There was an article in a local ham club newsletter not too long ago warning
about the battery packs that come with the Alinco DJ-580T and DJ-180T. It
seems that these Alinco packs are not diode-protected, and the son of the
article's author accidentally got both of the terminals of the pack touching
the spiral of his notebook while they were lying on his bed. Well, the battery
discharged, setting his notebook on fire, and generally causing alarm. The
author is convinced that had his son not been in the room when it happened,
that the damage from the fire would have been a lot worse.

Perhaps when I go home tonight, I'll dig the article up and reprint it here.
--
==
Kenneth E. Harker BNR "Any opinions expressed
kharker@bnr.ca Richardson, Texas, USA are solely mine and do
N1PVB (214) 684-5115 not represent BNR"
==

1085. Re: your LISTSERV request "list ham-homebrew"

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 18:44:41 UTC
From: Listserv@ucsd
Message-ID: <199312071844.KAA16163@ucsd.edu>
Source record: 119151

```
Per request by qychen@biology.utah.edu
"list ham-homebrew"
'ham-homebrew' is not subscribed to any mailing lists.
```

1086. Re: interference problem?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-07 18:54:20 UTC
From: N8AMX@tsnoblen
Message-ID: <2e29ef$7ch@terminator.rs.itd.umich.edu>
Source record: 119146

> and I heard the word "canada" in it...it was around 8-9pm).
> This morning I picked up the box at radio shack and put
> my board in it. (Here's the problem) I went out and wired the thing
> EXACTLY the same....nothing. I couldn't pick up a thing; not even
> the french/canadian station.

Try again at night, I dont know what frec. you are listing too, but your lack of recption might be due to propergation difference between morning and night. All so the station might just not be on the air at that time of day.

A better ant. is also in order.

N8AMX t.snoblen@compmail.com

1087. Kenwood HT Batteries - homebrew charger

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-08 16:34:47 UTC
From: jangus@skyld.tele.com
Message-ID: <755368487snx@skyld.tele.com>
Source record: 119155

In article <35923@dog.ee.lbl.gov> biocca@csg.lbl.gov writes:

>
> I'm considering building a charger for the TH-78a batteries. There

Well, unless you *like* to experiment, why not just buy a kenwood
charger.

These battery packs cost from $50 to $100 and the radios a lot more.
Is the savings in homerolling worth the risk of ruining either a
battery pack or the radio?

Similar problems arise when people decide they don't need to spend
the $30 for the cigarette lighter adaptor. It's OK if you copy the
Large inductor and capacitor circuitry so that the spikes from your
automotive electrical system don't kill the handheld.

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

1088. Bringing Kenwood TK-701S down to 2M.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-08 17:49:11 UTC
From: n8nxf@cyberspace.org
Message-ID: <CHq9IL.40K@cyberspace.org>
Source record: 119154

I have a Kenwood TK-107S VHF high band radio (150 to 174MHz) that
I want to re-tune for the 2M amateur band. This seems to be a very
well designed radio and should make a fine 2M rig.

I ordered a service manual from a Kenwood rep.($33!!), but it seems
to be a take-out from the owners manual. I'd like to get the
owners manual, or its remaider, too. If you have, or can direct me
to, such a manual at a reasonable price, please let me know.

I would also like to hear from anyone who has done this conversion
on this radio. I'd be interested in what components you changed
and any other pit-falls I should watch out for.

This radio has only 16 different ROM locations for different
frequencies. I am currently considering several different schemes
for covering the entire 2M ham band and + - offsets. I am not
interested in out of band operation. This radio was designed with
a tight front end and I want to keep it that way. I am currently
looking at using a micro controller, BCD thumb switch to ROM
decoder or up/down counter with LED display for freq. readout. I'd
like to be able to punch in the freq., offset, and maybe do some
scanning. Any low cost, easy to implement ideas out there? BTW,
I don't want it tied to a PC, etc.
(This radio has 16 inputs to the PLL for frequency programming.
N=Hex((xxxxx-2140)*2), where xxxxx is the frequency of interest in
10's of KHz and N is the resulting 4 place hex No. fed to the PLL.)

Thank you for any help!
Klaus (n8nxf@cyberspace.org)

1089. Built in transmatch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 00:07:38 UTC
From: zlau@arrl.org
Message-ID: <2675@arrl.org>
Source record: 119158

Has anyone figured how to design an RF output stage
with a built in transmatch that can't be mistuned
as a frequency multiplier?

This seems to be a big drawback of most tube output
networks--while they work fine as limited range
transmatches how can you tell you have it tuned
up in the proper band? It isn't always practical to
have an appropriately located station listen to
see which tuning settings are the right ones!

Obviously, putting in a low pass filter between the
matching network and the transmatch is one solution,
but modern transceivers *already* do that.

Anyone with a cheap and simple solution?

Zack Lau KH6CP/1

Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
Operating Interests: 10 GHz CW/SSB/FM
US Mail: c/o ARRL Lab 80/40/20 CW
225 Main Street Station capability: QRP, 1.8 MHz to 10 GHz
Newington CT 06111 modes: CW/SSB/FM/packet
amtor/baudot
Phone (if you really have to): 203-666-1541

1090. DDS article where???

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 13:42:11 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CHrsqG.4qu@cbnewsm.cb.att.com>
Source record: 119156

I was looking through my back issues of QST, 73 and CQ magazines last night looking for a article on a DDS VFO that a ham in Canada wrote. He also named the VFO after his daughter. I hope these are enough clues so that someone will remember in what magazine and when the article was published. Thanks!

Jeff
--
Jeff Jones AB6MB | Vote out those who voted for the North American
jeffj@seeker.mystic.com | Free Trade Agreement!
Infolinc BBS 510-778-5929 |

1091. replacement transistors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 16:06:45 UTC
From: majec@cactus.org
Message-ID: <1993Dec9.160645.19729@cactus.org>
Source record: 119159
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.misc

A question. I am about to build a 4 to 6 watt amp,
the design of which comes from page 61 of the Solid State Design book
by the ARRL. They call for a GE D446C transistor, and suggest a 2n5321
as a replacement worth experimenting with. Well being very new to this
hobby I am not sure if the design of the amp is highly dependent on
the characteristics of those particular devices or can I substitute
another device. If any of you are familiar with the amp design please make
some suggestions for replacement transistors for me.
Thanks

Ed Guinn
kb5ruf
majec@cactus.org

1092. Re: Built in transmatch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 18:56:54 UTC
From: jms@col.hp.com
Message-ID: <2e7sdm$7o@hp-col.col.hp.com>
Source record: 119157

Zack Lau (zlau@arrl.org) wrote:

: Has anyone figured how to design an RF output stage
: with a built in transmatch that can't be mistuned
: as a frequency multiplier?

: This seems to be a big drawback of most tube output
: networks--while they work fine as limited range
: transmatches how can you tell you have it tuned
: up in the proper band? It isn't always practical to
: have an appropriately located station listen to
: see which tuning settings are the right ones!

: Obviously, putting in a low pass filter between the
: matching network and the transmatch is one solution,
: but modern transceivers *already* do that.

: Anyone with a cheap and simple solution?

Start with the plate tuning capacitor at maximum capacity and tune
for a dip? Or are you referring to using one band position to tune
2 bands, e.g. the 'WARC' bands?

K0TER

1093. SSTV via soundblaster available

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 20:52:45 UTC
From: mckee@fc.hp.com
Message-ID: <CHsCny.BC7@fc.hp.com>
Source record: 119162

Greetings:

The purpose of this note is to announce the availability of Version 1.0 of
my software SSTV package. It requires you to have connected your radio to
your soundblaster in such a way that you can make successful recordings
using the VEDIT program (VEDIT2 for SB pro) that came with your soundblaster.
Depending upon how you do it, you might need to build a resistor divider to
get the levels right. I assume you can (and have) done this.

My program SHOULD talk to your SB directly, but for various reasons I have
not tested this. But I have used audio recorded with VEDIT2 to successfully
display SSTV pictures.

The program is available from
hpcsos.col.hp.com (15.255.240.16)
as
misc/hamradio/sstv.lzh

73 and good luck,

Bret mckee@fc.hp.com
N0MTA

Here is the README:

This is the readme for N0MTA SSTV system. It is an ALL SOFTWARE SSTV
solution for Hams with a PC and Soundblaster card. I have used it
on a 25 MHZ 80386-SX and it will process images in real time
(with no filtering).

The software is distributed as shareware. Despite some trends to the
contrary, I have chosen to disable some of the more advanced
functionality in the shareware version. If you do not approve, don't
use it. I will make a reasonable attempt to provide support for
registered users, but I do have a day job...

The software supports the following SSTV formats:

Robot
8/12 second
12/24 second
24/36 second
36/72 second

ATV
24 second
90 second

94 second
188 second

It currently does not support any of the Scotty formats, and does not
do WEFAX. The design would make it fairly straightforward to do so,
but I have not. If enough registered users ask for these features,
I'll add them.

The options the shareware version allows are (from sstv -?):

```
-------------------------------------------------
N0MTA Slow Scan TeleVision Software Version 1.0
Shareware version
(c) Copyright 1992 and 1993 by Bret McKee.
All Rights Reserved
usage ./sstv.exe: <options> <filename>
-N No screen output (for timing)
-S <Smooth size (for PLL)>
-a <frequency adjust (for PLL)>
-c <max colors>
-d dither
-h <highest frequency (for PLL)>
-i <frequency increment (for PLL)>
-l <lowest frequency (for PLL)>
-n no sync
-v verbose output
-------------------------------------------------
```

The shareware version is B&W only, and the digital filtering
options are disabled.

Supported video cards are EGA, VGA, SVGA. For EGA, use of dithering
(the -d option) is highly recommended. For SVGA, the program does not
use more than 256 color, and uses the highest resolution the system will
give it.

The software SHOULD talk to a soundblaster directly, but for a variety of
reasons (I moved and my station is not entirely reassembled yet) I have not
tested it. To try and have it talk to the SB, invoke it with "SB:" as
the argument (i.e. sstv SB:).

I have tested it using .VOC files created using the utilities supplied with
the Soundblaster card (VEDIT2). The software requires the file to
be recorded as 8000 HZ MONO. When you have recorded the file, exit VEDIT2,
and invoke the program with the file you recorded as the argument (i.e.
sstv <file>.voc).

There are two registration options, which I refer to as the experimenter and
the operator registrations.

The experimenter registration is $25, and I send you a disk with the SOURCE
CODE to the current version. It is written in C, and I have used MicroSoft C
version 7.0 and 8.0 to compile it. I compiled it once a while ago

with Borland C, and while it didn't "just work", it was not rocket science
to get it working. The source includes the routines to decode the pictures,
routines to do filtering with FFTs, and routines to talk to a Soundblaster,
plus all additional routines. Note that you MUST have a compiler to use
this option, since I do not include an EXECUTABLE with it.

Here are the restrictions on the source provided with the experimenter
version:

```
/*************************************************************************
* This source module is part of N0MTA's all software SSTV package.
* All the modules in this package are covered by this copyright notice.
* By using this software you agree to be bound by the conditions of this
* notice.
*
* This software is copyright 1993 by Bret Mckee. All rights are reserved
* by the author, except:
*
* Modified versions of the source code may be distributed for NO
* FEE whatsoever provided that this notice remains intact
* AND the author of the modifications adds no additional
* restrictions.
*
* Note that the author has retained ALL RIGHTS TO DISTRIBUTE OBJECT FILES
* (with or without charge).
*
* The intention is to allow persons interested in modifying the source to be
* able to easily do so, and to be able to freely share their modifications
* with other such people, while reserving for the original author any
* profits from those who simply wish to have an inexpensive SSTV station.
*
* Feel free to contact the author regarding this software.
*
*************************************************************************/
```

The operator registration is $30, and I send you a disk with the latest
version of the EXECUTABLE program, including color and the digital filtering.

Send registrations to
Bret McKee
1712 Ridgewood Road
Fort Collins, CO 80526-1520

Comments/Questions may be sent to the above address, or may be sent
electronically to either:

mckee@fc.hp.com (internet)

72223,2702 (CI$)

1094. Re: Kenwood HT Batteries - homebrew charger

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-09 21:42:30 UTC
From: biocca@csg.lbl.gov
Message-ID: <35974@dog.ee.lbl.gov>
Source record: 119167

In article <755368487snx@skyld.tele.com> jangus@skyld.tele.com (Jeffrey D. Angus) writes:
>
>In article <35923@dog.ee.lbl.gov> biocca@csg.lbl.gov writes:
>
> > I'm considering building a charger for the TH-78a batteries. There
>
> Well, unless you *like* to experiment, why not just buy a kenwood
> charger.

If I wasn't interesting in experimenting, I don't think I would have
posted here in rec.radio.amateur.homebrew. :-)

I considered buying a Kenwood charger, though I am more impressed at this
point in the W&W model (that works with any brand batteries).
Even if I do buy one of these, I still would like a fast charger in each
vehicle (we have two hams in the family). At $90 each that makes homebrew
more attractive. Will the Kenwood charger even run from 12VDC?

> These battery packs cost from $50 to $100 and the radios a lot more.
> Is the savings in homerolling worth the risk of ruining either a
> battery pack or the radio?

How much does it cost to build one? - If I use 12VDC input (the batteries
I'm charging are 7.2V, not the 12V ones) the cost of the charger is
one chip plus about three bucks in misc parts. I don't have a price on the
chip, but perhaps it is another five. The hardest part is fabricating
a convenient connection to the battery.

Risk - there is some risk to the batteries of course, but none to the
radio - it has polarity protection and can handle the full 12 volts.
I plan to set it up to charge the battery outside the radio anyway, so
there is no risk of leakage contaminating the rig. That also gives me the
option of charging through the top of the battery avoiding the circuitry
that appears to be inside the battery. This also allows me to tape over
the contacts on the bottom of the battery and avoid problems with external
shorts there.

This chip is designed to do this exact job, and has extensive data
sheets, so I suspect the risk is minimal. I'd do all testing on AA
nicads, risking about $5 of batteries total. The chip I'm looking at
is the MAX713 negative delta V nicad battery charger chip. It monitors
voltage, temperature, current, and time if you want to use all the features.
Temperature requires internal thermistors in the pack, but is not
necessary except for charge rates greater than 2C.

> Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
>Internet: jangus@skyld.tele.com | universe run by a single omni-

Alan K Biocca
WB6ZQZ

1095. Wanna build VLF rcvr. Info?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-10 18:20:28 UTC
From: pharden@Mr-Hyde.aoc.nrao.edu
Message-ID: <1993Dec10.182028.2774@Mr-Hyde.aoc.nrao.edu>
Source record: 119164

Does anyone know the whereabouts of information for building
a VLF receiver (500 kHz and below?). Either a kit or 100%
homebrew?

Thanks,
Paul Harden, NA5N
pharden@nrao.zia.edu

1096. UNSUBSCRIBE

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-10 22:23:09 UTC
From: pea@wri.COM
Message-ID: <199312102223.AA26842@dragonfly.wri.com>
Source record: 119163

```
UNSUBSCRIBE
```

1097. Re: Built in transmatch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-11 15:29:56 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec11.152956.19731@ke4zv.atl.ga.us>
Source record: 119035

In article <2675@arrl.org> zlau@arrl.org (Zack Lau) writes:
>
>Has anyone figured how to design an RF output stage
>with a built in transmatch that can't be mistuned
>as a frequency multiplier?
>
>This seems to be a big drawback of most tube output
>networks--while they work fine as limited range
>transmatches how can you tell you have it tuned
>up in the proper band? It isn't always practical to
>have an appropriately located station listen to
>see which tuning settings are the right ones!
>
>Obviously, putting in a low pass filter between the
>matching network and the transmatch is one solution,
>but modern transceivers *already* do that.
>
>Anyone with a cheap and simple solution?

Normal practice is to *not* design tank circuits that can
resonate across multiple octaves. That doesn't normally
limit the range of impedances a network can match, but it
does limit the types of networks that can be used.

In the case where a network can span octaves, the simple
expedient is to always start tuning from the lowest resonant
point and stop at the first dip in plate current. Of course
operating the stage class AB1 will limit the harmonic energy
considerably in any event.

Gary
--
Gary Coffman KE4ZV | I kill you, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | You kill me, | uunet!rsiatl!ke4zv!gary
534 Shannon Way | We're the Manson Family | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -sorry Barney |

1098. Precision resistors question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-11 21:15:36 UTC
From: jherman@uhunix3.uhcc.Hawaii.Edu
Message-ID: <CHw320.5vF@news.Hawaii.Edu>
Source record: 119165

I have questions concerning the following two precision resistors:

1. Shallcross Akra-ohm wirewound type BX-100-J RB21B 13001F ABS

Is the resistance 13000 ohms? (1300 * 10^1 is how I interpret 13001)
What is the tolerance?

2. Resistance Products Company LFB RB15AK 1R669F

Is the resistance 1.669 ohms?
What is the tolerance?

I'm posting this for a engineer friend - I've never had reason to work
with these type of resistors.

Thanks so much!

Jeff NH6IL

1099. Minisport Laptop Hacker - Vol 18

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-11 21:28:12 UTC
From: bmork@opus-ovh.spk.wa.us
Message-ID: <PHXeec2w165w@opus-ovh.spk.wa.us>
Source record: 119166

MiniSport Laptop Hacker - Vol 18, Dec 1993
To discourage pecuniary interests, Copyright (c) 1993 Brian Mork

>>> ADMIN
Remember, you can get copies on disk of any software or text file I refer to (including the MLHacker series) by sending me a disk and SASE. I'll put a variety of other MLHacker related goodies on there, too. MLHacker is available on the KA6ETB Internet HAM-Server. Send a message to ham-server@grafex.cupertino.ca.us with the single line of text: HELP to get access information. Check the \hamradio\newsletters directory. If you're comfortable with late-night long distance phone calls, you may download MLHacker related stuff directly from me at 509-244-9260. Use the FILES command, and L)og into the \public\computer directory. Standard XMODEM and YMODEM protocols are available. ARO related CD-ROM, Internet e-mail, and Usenet newsgroups are also available from this free service.

>>> POWER SUPPLY
Nothing, I repeat nothing, beats a schematic diagram when fixing electrical equipment. No fancy test equipment can compare. Thank you big time, Brian, for 1) recognizing my reverse engineered attempt (see Vol 17), and 2) sending me the real schematic! Two hours later... I have a dead n-channel enhancement-mode MOSFET ("K612" in case anybody can offer a cross reference). There's a 7V p-p, 500 KHz square wave arriving at the gate. The intent is that the drain pulls current through a switching power supply transformer primary. Wasn't happ'ning. Drain stays at the +V supply voltage. Comparing with another K612 that handles the electroluminescent screen voltages confirms the first one is not working.

Several parts houses couldn't identify the K612 part, so I made a trip to Radio Shack and picked up a 276-2072 IFR510 n-Channel MOSFET. It's about twice as big as the K612, and its specifications are an over-kill, but it's all I had available. It cost just over $2.00. Instead of mounting it as a surface mount on the bottom side of the circuit board, I layed it sideways between some capacitors on the top of the circuit board and ran hookup wire to the bottom side of the board for connections. Everything works fine! A representation of the power supply pinout given in Vol 5 is in order. This time, I know functionality, too.

With the bottom of the computer removed, the motherboard still in place, pin 1 is toward the right and front of the computer, numbered like this:

15 13 11 9 7 5 3 1
16 14 12 10 8 6 4 2

1 5 V backup supply #1, 10-300 mA
2 BACKUP-ON request from computer, TTL levels
3 Ground (backup power supplies)
4 5 V backup supply #2, 10-45 mA
5 VEE-ON request from computer, TTL levels
6 -22 V (Vee), 10mA
7 +10 V, 10 mA
8 -10 V, 10 mA
9 EL-ON (LCD screen) request from computer, TTL
10 Li Battery +V input to power supply (~6.3 V)
11 Ground (Li battery circuits)
12 POWER-ON request from computer, TTL levels
13 Ground (hi current return from pins 15/16)
14 Duplicates Pin 13
15 5 V (Vcc), 0.25-0.6 A)
16 Duplicates Pin 15

A note of caution is in order. The computer will automatically shut down if certain voltages don't come up to specs within a few seconds (this appears as a 2 second blink of the power and numlock LEDs and the screen). Requests from the computer can be deceiving unless you know what you're looking at. For instance, I repeatedly measured Pin 9 at zero volts during my debugging. I thought the computer was erroneously not asking for the screen voltages. In fact, right when I pushed the power button, it came high for a few seconds, and then shut back off. It !was! working ok. Pin 12, on the other hand, went high to 5+ volts and then dropped back to 4.7 volts as the main 5 V supplies were shut down. This pin kept the request (4.7 volts is TTL high) active, and only dropped back to zero when I pressed the power switch once again, telling the computer to shut "off". Realize if there are good NiCads, good Li batteries, or the external charger is plugged in, this computer never really shuts totally off.

There are three main sections to the power supply. The first handles all the 5 Volt supplies. Both batteries are brought in to this section and the normal computer supply and the backup voltages are provided from this circuitry. If pins 1, 4, 15, or 16 are bad at the power supply header, this section is malfunctioning.

The second section is where my trouble occurred. An integrated circuit regulator provides oscillation signals for the switching converter and appropriate voltage feedback control. A three-tapped transformer followed by diode rectification provides +10v, -10v and -22v. If pins 6, 7, or 8 are not at correct voltages, suspect problems in this area.

The last section is associated with the electroluminescent screen voltages, and has its own 6-pin header. To see it, open up your Minisport using the directions in MLH Vol 5 and find the 6-pin jumper going from the power supply board into the display pivot joint. Only 4 wires are used. One handles ground. Two carry current to/from the brightness control, and one is the high voltage drive for the display. Specifically:

6 50-150 VAC p-p, nominally 138 VAC
5 n/c
4 GND
3 n/c
2 return from 20 Kohm brightness control
1 diode rectified 10 VDC going to brightness control

If pins 1 or 6 !of the screen connector! are at incorrect voltages, suspect problems here. Incidentally, Pin 9 of the motherboard power supply connector (see MLH Vol 5 and Vol 17) is a TTL level request from the computer to turn the electroluminescent display on. It goes into Pin 14 of the MB3778. The MB3778 oscillator output is buffered through three parallel CMOS gates and toggles the gate of a K612 MOSFET, which in turn pulls current through a transformer. Subsequently, a high voltage step up transformer (looks like a telephone line isolation transformer) generates the high VAC for the screen.

Packing tape applied on the front and sides of the keyboard worked well to bundle the keyboard to the motherboard as I worked on the assembly. Without this, the keyboard connector ribbons get severely strained as the board is flipped this way then that way.

I am growing to dislike auto-routed circuit boards. The computer logic generates through-the-board vias that terribly confuse a person trying to trace the circuitry. In a lot of cases, casual inspection shows single side alternative routes were available.

>>> BAD ROM DISK
I received a message over Internet from a Minisport user that indicated his ROM disk (C:) has gone dead. He's getting checksum errors on boot-up. Do you have the equipment and willingness to pull your ROM, make a copy and send it on to Ron? I ask this not just for one user, but everyone else this will eventually happen to. The source for original ROMs has dried up, and if we're going to keep Minisports working, it would be good to know who could do this for others.

>>> MEMORY SWAPS
The first MB of memory on a ZL-2 is eight discrete chips soldered on the motherboard. The second MB is a SIPP package. I know from experience the 2nd MB can be unsoldered and swapped into a ZL-1. Thomas asks if the lower and upper MB are interchangeable. Unfortunately, no. However, I would be interested in soldering a standard PC SIPP into my ZL-1 and see if the graft takes. Do you have an unused 1 MB SIPP you'd be willing to let me use?

Please provide feedback: * BBS 1-509-244-9260
* AX.25 KA9SNF@wb7nnf.#spokn.wa.usa
* Internet bmork@opus-ovh.spk.wa.us
73, Brian * 6006-B Eaker, Fairchild, WA 99011

Brian Mork Internet bmork@opus-ovh.spk.wa.us (BBS 509-244-9260)
. . . .. Amateur Radio (AX.25) ka9snf@wb7nnf.#spokn.wa.usa

... . . USMail 6006-B Eaker, Fairchild, WA 99011

1100. Nation-specific radios (?) and Powering small speakers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-12 02:58:47 UTC
From: st92ba44@dunx1.ocs.drexel.edu
Message-ID: <CHwIxz.8Mx@Dunx1.OCS.Drexel.Edu>
Source record: 119161

hello all.
I was just wondering if someone out there might have the answer(s) to
the following:

1) my grandfather bought a radio last year that was marketed to bring in
a foreign channel (italian news/entertainment) 24 hours a day. He listens
to it all the time so I assume that its working the way it should. Here's
my problem, how does the radio (with only a 2 foot antenna) pick up the
signals from italy 24 hours a day? What kind of radio is it?

2) also, (i have successfully finished my first radio!) and I was wondering
if I couldn't get it to drive a small speaker. Its meant to power a
set of low impedence phones. the book I have has the schematic for
a simple amp but it recommends against using it with the radio I have
built (crystal shortwave). Is there a way to boost the output so as
to drive, say, a 2" speaker? Thanks.

---
antonio gatta
st92ba44@dunx1.ocs.drexel.edu

1101. Re: Nation-specific radios (?) and Powering small speakers

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-12 16:19:10 UTC
From: gsmlrn@gsm001.mendelson.com
Message-ID: <1993Dec12.161910.8705@gsm001.mendelson.com>
Source record: 119160

In article <CHwIxz.8Mx@Dunx1.OCS.Drexel.Edu>
st92ba44@dunx1.ocs.drexel.edu (antonio gatta) writes:

>1) my grandfather bought a radio last year that was marketed to bring in
> a foreign channel (italian news/entertainment) 24 hours a day. He listens
> to it all the time so I assume that its working the way it should. Here's
> my problem, how does the radio (with only a 2 foot antenna) pick up the
> signals from italy 24 hours a day? What kind of radio is it?

Most likely it is an FM broadcast radio with an SCA (SubCarier
Authorization) decoder. The bandwidth of an fm broadcast signal is wide enough
that with proper permits, a station can broadcast another program.

Many people use these for alternate language programimg.

Ramsey sells an SCA decoder kit, but it is now illegal to listen to
SCA broadcasts without permission of the broadcaster. If they are using the
sales of the radio to finance the air time, they might say no.

73,

Geoff.

--
I used to talk to myself..... Now that I am a ham, I send code to myself:
-... --- -.-- - .... --. ..- -.-- .. ... .-- . .. .-. -.. .-.-.-

Geoffrey S. Mendelson N3OWJ (215) 242-8712 gsm@mendelson.com

1102. Re: Built in transmatch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-13 15:52:01 UTC
From: zlau@arrl.org
Message-ID: <2693@arrl.org>
Source record: 119018

In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>In article <2675@arrl.org> zlau@arrl.org (Zack Lau) writes:
>>
>>Has anyone figured how to design an RF output stage
>>with a built in transmatch that can't be mistuned
>>as a frequency multiplier?
>
>Normal practice is to *not* design tank circuits that can
>resonate across multiple octaves. That doesn't normally
>limit the range of impedances a network can match, but it
>does limit the types of networks that can be used.

This is easy if you are designing it to run into a *known*
impedance. But, if you want you matching network to also
operate as a transmatch, you have now have a real challenge.

Summarizing the email I've gotten, it looks like it may be
possible to use a phase/frequency ECL detector like the
MC12040 and a variable phase shifter to detect frequency
multiplier operation--at least in theory.

There are other possibilities, such as measuring the
impedance presented to the transmitter and calculating
the best matching network to use. This has the advantage
that a sophisticated system might also determine the expected
harmonic rejection of the resulting network into the actual
load. Even a degraded harmonic rejection can cause problems.

But, looking at the big picture, it probably makes sense
to stick with the modern approach and go to 50 ohms
so you can add that low pass filter--if needed. After
all, when solving sticky political/technical problems
like RFI, it sometimes helps be able to say you did something
to fix the problem. Even if it was technically irrelevant...

Zack Lau KH6CP/1
Internet: zlau@arrl.org "Working" on 24 GHz SSB/CW gear
8 states on 10 GHz.

1103. PIN diode question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-13 20:13:56 UTC
From: rlt@ssd.intel.com
Message-ID: <CHzpJ8.333@SSD.intel.com>
Source record: 119019

Dear PIN diode hotshots:

I am considering using PIN diodes to switch between bandpass networks in a project. However, I read in Hewlett Packard Application note 922 about the low frequency limit at which these devices can be used. It mentions that at frequencies well below fc= 1/(2*pi*tau) that a PIN diode acts like an ordinary PN diode. At frequencies about 10*fc, the PIN diode looks like a variable resistor.

My question is: does this restriction apply only to applications where the diode is used in the linear resistance region. My application would operate only in the fully "on" or fully "off" (i.e. switch) regions. Are there any other "gotchas" for PIN diode usage at 3-30MHz?

Thanks

--
Roger Traylor
rlt@ssd.intel.com
Intel Corporation - Supercomputer Systems Division
Beaverton, OR 97006

1104. Re: Wanna build VLF rcvr. Info?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-13 20:46:09 UTC
From: groverc@gvgadg.gvg.tek.com
Message-ID: <7819@gold.gvg.tek.com>
Source record: 119020

In article <1993Dec10.182028.2774@Mr-Hyde.aoc.nrao.edu>,
<pharden@Mr-Hyde.aoc.nrao.edu> writes:
> Does anyone know the whereabouts of information for building
> a VLF receiver (500 kHz and below?). Either a kit or 100%
> homebrew?
>
I need the same info, should anyone have it.

thanks and 73,

Grover
WT6P

1105. Re: PIN diode question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-13 21:47:02 UTC
From: alanb@sr.hp.com
Message-ID: <CHztuG.BCn@srgenprp.sr.hp.com>
Source record: 119021

Roger Traylor (rlt@ssd.intel.com) wrote:
: Dear PIN diode hotshots:

: I am considering using PIN diodes to switch between bandpass
: networks in a project. However, I read in Hewlett Packard
: Application note 922 about the low frequency limit at which
: these devices can be used. It mentions that at frequencies
: well below fc= 1/(2*pi*tau) that a PIN diode acts like an
: ordinary PN diode. At frequencies about 10*fc, the PIN diode
: looks like a variable resistor.
:
: My question is: does this restriction apply only to
: applications where the diode is used in the linear resistance
: region. My application would operate only in the fully "on"
: or fully "off" (i.e. switch) regions. Are there any other
: "gotchas" for PIN diode usage at 3-30MHz?

Discalimer: I'm not a PIN diode expert.

If you run a DC current through the diode greater than the peak signal current (1.4 times max RMS current), then the diode should be "on" even if the frequency is too low for true PIN action.

Similarly, if you back-bias the diode with a voltage greater than the peak signal voltage (1.4 times max RMS voltage), then the diode should be "off" even at low frequencies.

AL N1AL

1106. Re: PIN diode question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-13 22:52:54 UTC
From: drew@trl.oz.au
Message-ID: <drew.93.0@trl.oz.au>
Source record: 119022

In article <CHzpJ8.333@SSD.intel.com> rlt@ssd.intel.com (Roger Traylor) writes:
>From: rlt@ssd.intel.com (Roger Traylor)
>Subject: PIN diode question
>Date: Mon, 13 Dec 1993 20:13:56 GMT
>Dear PIN diode hotshots:
>
>I am considering using PIN diodes to switch between bandpass
>networks in a project. However, I read in Hewlett Packard
>Application note 922 about the low frequency limit at which
>these devices can be used. It mentions that at frequencies
>well below fc= 1/(2*pi*tau) that a PIN diode acts like an
>ordinary PN diode. At frequencies about 10*fc, the PIN diode
>looks like a variable resistor.
>
>My question is: does this restriction apply only to
>applications where the diode is used in the linear resistance
>region. My application would operate only in the fully "on"
>or fully "off" (i.e. switch) regions. Are there any other
>"gotchas" for PIN diode usage at 3-30MHz?
>
>Thanks
>
>--
> Roger Traylor
> rlt@ssd.intel.com
> Intel Corporation - Supercomputer Systems Division
> Beaverton, OR 97006

Roger, in a simple on or off application, you can probably get away with
ordinary small-signal diodes e.g. 1N914's.

When the diode is biased on, the peak value of the signal being carried
by the diode must not be so great as to turn the diode off, and
when the diode is biased off, the signal being blocked must not be large
enough to turn the diode on. See Ten Tec circuits for examples.

Kind Regards,

Drew, VK3XU. Telecom Australia Research Laboratories.

1107. Re: Wanna build VLF rcvr. Info?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 04:30:45 UTC
From: mlf@wyvern.wyvern.com
Message-ID: <CI0CJA.JMJ@wyvern.wyvern.com>
Source record: 119023

groverc@gvgadg.gvg.tek.com writes:

>In article <1993Dec10.182028.2774@Mr-Hyde.aoc.nrao.edu>,
><pharden@Mr-Hyde.aoc.nrao.edu> writes:
>> Does anyone know the whereabouts of information for building
>> a VLF receiver (500 kHz and below?). Either a kit or 100%
>> homebrew?
>>
>I need the same info, should anyone have it.
>Grover
>WT6P

2 or 3 years ago, 73 magazine had an article on a VLF transverter.
You could buy the kit from Curry communications, in CAlifornia,
I think.

Hope this helps!

73, de Mark, KD4GGP
--
"Ad Astra, Per Aspera"

1108. Two-Fer Instability on 20 Meters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 14:39:11 UTC
From: awinterb@du.edu
Message-ID: <CI14pC.9un@du.edu>
Source record: 119025

Having built one of the "twofer" rigs (transmitter only) for 30 meters, I decided to build another "multiband" version based on some info in a recent QRP ARCI article. The "twofer" is supposed to be pretty broadbanded, so to make it multiband means just building a set of switchable low-pass filters at the output. Mine were rudimentary 3-pole ones.

Anyhow, it works find on 30 meters. On 20 meters, however, it seems to be unstable. Although I can't hear too much on the station receiver, other stations remark that the signal shifts a bit in frequency on key-down. It's not a chirp, but just a slight downward shift a few hertz or so.

One station suggested that I vary the capacitive coupling between the oscillator and the driver stages. I increased that value from 33 pf to 150 pf, which did increase power output some. However, it didn't fix the frequency shift.

The output power of the driver can be varied by varying resistance on its emitter. Although I've had different values in there in the past without noticeable effect, I'm going to put a variable resistor in there to further investigate what effects that may have on stability in case the biasing of the driver can affect the previous oscillator stage.

One other thing I may do is jumper the RFC that's in series with the crystal. I'm using 32 pf crystals in HC6 holders.

I wonder if anyone else has had similar problems with the "twofer." I haven't tried the rig on other bands for which I've built filters (40, 17, and 15 meters) due to lack of crystals. However, I'd also be interested in similar problems anyone's experienced on other bands.

73 de Art

N0OQS

awinterb@du.edu

Art Winterbauer N0OQS
Internet: awinterb@du.edu OR awinterb@diana.cair.du.edu
Packet: n0oqs @ w0ljf.#neco.co.usa

--
Art Winterbauer N0OQS
Internet: awinterb@du.edu OR awinterb@diana.cair.du.edu
Packet: n0oqs @ w0ljf.#neco.co.usa

1109. Receiver questions ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 14:40:35 UTC
From: tavernin@sun1.interlan.com
Message-ID: <CI14ro.EFq@rd1.InterLan.COM>
Source record: 119024

I just recently purchased a Ten-Tec Century 21 and I noticed that the receiver's sensitivity is rather poor (it's spec'd at 1uV) and I was wondering ...

The receiver is a double direct conversion design, eg. -

T/R Switch

Bandpass Filters

Xtal Osc --> Mixer

I.F. Amp

VFO --> Product Detector

Audio Amp

and it has no gain stage in from of the first mixer ... would a broadband preamp increase performance significantly!? Would the proper place to insert a preamp be between the T/R Switch and the Bandpass Filters? How much gain and what type of noise figure should the preamp have?

On a side note ... I called Advanced Receiver Research and the have a 1-30MHz preamp with 20dB gain and 2.5db NF ... is this a suitable unit? And (one last question :-) does anybody have any experience with Advanced Receiver Research products?

Thanks,

Victor Tavernini
Racal-Datacom, Inc.

tavernin@sun1.interlan.com

1110. Re: Feedthrough Capacitors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 15:31:16 UTC
From: c2k@ham.slc.mentorg.com
Message-ID: <C2K.93Dec14153116@ham.slc.mentorg.com>
Source record: 119029

In article <2eks6e$so2@msuinfo.cl.msu.edu> cravitma@cps.msu.edu (Matthew B Cravit) writes:

Path: hpcan240.mentorg.com!news.mentorg.com!uunet!pipex!howland.reston.ans.net!agate!msuinfo!arctic2!cravitma
From: cravitma@cps.msu.edu (Matthew B Cravit)
Newsgroups: rec.radio.amateur.homebrew
Subject: Feedthrough Capacitors
Date: 14 Dec 1993 17:12:46 GMT
Organization: Department of Computer Science, Michigan State University
Lines: 15
Distribution: usa
Message-ID: <2eks6e$so2@msuinfo.cl.msu.edu>
NNTP-Posting-Host: arctic2.cps.msu.edu
Originator: cravitma@arctic2

I have decided to try to build one of the 144 MHz amplifiers from the
ARRL handbook, and came across a part which I don't think I ever saw
before in my limited electronics background. Can someone please tell
me what a feedthrough capacitor is, and why it would be used instead
of a regular capacitor?

Thanks very much.

/Matthew (Still waiting for my ticket, 5 weeks and counting)

A feedthrough capacitor is a typically small-value capacitor with three
terminals. Two of the terminals are at opposite ends of the capacitor,
and are connected together. The body of the capacitor typically has a
solder-ring which forms the third terminal, and is the other side of the
capacitor. These are used to provide low inductance bypass to ground
for RF signals -- often for power or lower frequency signals which pass
into or out of an "RF-hot" compartment.

Bad ASCII graphics:

```
_________________________________input/output terminals
/ _ /
/ | | /
---------|==| |=|------
|_| <-----------solder ring
```

Cheers,
Carl
--

My opinions are mine, (all mine), and do not necessarily reflect
those of my employer.

Carl Ketcham carl_ketcham@mentorg.com WA7ZBV
Mentor Graphics, Suite 300, 5295 South 300 West, Murray, Utah 84107

1111. Re: PIN diode question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 15:47:18 UTC
From: zlau@arrl.org
Message-ID: <2701@arrl.org>
Source record: 119062

In rec.radio.amateur.homebrew, rlt@ssd.intel.com (Roger Traylor) writes:
>Dear PIN diode hotshots:
>
>I am considering using PIN diodes to switch between bandpass
>networks in a project. However, I read in Hewlett Packard
>Application note 922 about the low frequency limit at which
>these devices can be used. It mentions that at frequencies
>well below fc= 1/(2*pi*tau) that a PIN diode acts like an
>ordinary PN diode. At frequencies about 10*fc, the PIN diode
>looks like a variable resistor.
>
>My question is: does this restriction apply only to
>applications where the diode is used in the linear resistance
>region. My application would operate only in the fully "on"
>or fully "off" (i.e. switch) regions. Are there any other
>"gotchas" for PIN diode usage at 3-30MHz?

Depending on your application, an ordinary PN diode may have
acceptable distortion characteristics. I've used 1N4148s
as microwave IF switches and not measured any problems.
On the other hand, I'm not sure I'd use them as the input
switches to a general coverage HF receiver.

When calculating when the diode is fully on, you should use
a charge model. Some people try to use voltage models, which
don't predict predict what current is needed to keep the diode
on. The current needed is inversely proportional to the
frequency. Thus, switching VHF is easy, while audio switching
with forward biased diodes is tough. Actually, I've been told
that the latter has been tried in commercial products--with
poor results. They apparently have switched over to 4066 type
switches.

With enough current, 1N4007 diodes with work, though the loss
is noticeably higher (2 dB??). I've also heard that 2nd order
distortion can be a problem even when the third order intercept
is acceptable, but haven't run any measurements on this yet.

The big gotcha is getting the diodes you want. If you are
patient you can find them inexpensively surplus. I'm not
even sure the guys with big $$$ can get always get medium
or high power PIN diodes without waiting a few months.

Zack Lau KH6CP/1

Internet: zlau@arrl.org
.

1112. Re: Built in transmatch

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 16:05:46 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec14.160546.3587@ke4zv.atl.ga.us>
Source record: 119060

In article <2693@arrl.org> zlau@arrl.org (Zack Lau) writes:
>In rec.radio.amateur.homebrew, gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>>In article <2675@arrl.org> zlau@arrl.org (Zack Lau) writes:
>>>Has anyone figured how to design an RF output stage
>>>with a built in transmatch that can't be mistuned
>>>as a frequency multiplier?
>>
>>Normal practice is to *not* design tank circuits that can
>>resonate across multiple octaves. That doesn't normally
>>limit the range of impedances a network can match, but it
>>does limit the types of networks that can be used.
>
>This is easy if you are designing it to run into a *known*
>impedance. But, if you want you matching network to also
>operate as a transmatch, you have now have a real challenge.

Only if your idea of a transmatch is a network similar to
the boxes commonly sold today. Consider instead a parallel
tank circuit with link coupling. With a swinging link, a wide
variety of impedances can be matched without the necessity of
having a network that can resonate over several octaves. The
secret of course is that untuned link. You can add an L network
after it, or just a simple capacitor or inductor, in order to
absorb any reactances in the load impedance.

Gary
--
Gary Coffman KE4ZV | I kill you, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | You kill me, | uunet!rsiatl!ke4zv!gary
534 Shannon Way | We're the Manson Family | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -sorry Barney |

1113. Schematic for PLL VFO?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 16:40:35 UTC
From: jeffj@cbnewsm.cb.att.com
Message-ID: <CI1ABu.3Cn@cbnewsm.cb.att.com>
Source record: 119026

Does anyone have a schematic for Phase Lock Loop VFO laying around for 20 meters and other bands for that matter? I have been interested in building a computer controlled transceiver and this looks like a good way to go. Thanks and 73!

Jeff
--
Jeff Jones AB6MB | Vote out those who voted for the North American
jeffj@seeker.mystic.com | Free Trade Agreement!
Infolinc BBS 510-778-5929 |

1114. Help! 9600 baud info needed!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 16:56:30 UTC
From: debaker@bnr.ca
Message-ID: <2ekr7u$al@crchh7b0.bnr.ca>
Source record: 119028
Cross-posted to: rec.radio.amateur.digital.misc,rec.radio.amateur.homebrew,rec.radio.amateur.misc

I am trying to get a radio modified for 9600 operation, but so far I haven't been able to get very much information. I am using a Kenwood TM-742A, and would like to run it at 9600. If anyone (preferably someone with a modified 742) knows how to do this, please email or post here, or packet mail at AB5PI@N5LDD.#DFW.TX.USA.NA

Thanks,


```
------------------------------------------------------------
| David E. Baker Opinions expressed are |
| Callsign: AB5PI mine, and they do not |
| Internet: debaker@bnr.ca necessarily reflect |
| IP Addr: 47.122.65.7 the opinions of BNR or |
| Unix ID: crchh7b0 or Northern Telecom. |
|----------------------------------------------------------|
```

1115. Feedthrough Capacitors

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 17:12:46 UTC
From: cravitma@cps.msu.edu
Message-ID: <2eks6e$so2@msuinfo.cl.msu.edu>
Source record: 119027

I have decided to try to build one of the 144 MHz amplifiers from the ARRL handbook, and came across a part which I don't think I ever saw before in my limited electronics background. Can someone please tell me what a feedthrough capacitor is, and why it would be used instead of a regular capacitor?

Thanks very much.

/Matthew (Still waiting for my ticket, 5 weeks and counting)

--
Matthew Cravit | All opinions expressed here are
Michigan State University | my own. I don't speak for Michigan
East Lansing, MI 48825 | State, and they don't speak for me
E-Mail: cravitma@cps.msu.edu | (thank goodness).

1116. DF Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 19:33:33 UTC
From: sawicki@vnet.IBM.COM
Message-ID: <19931214.113916.343@almaden.ibm.com>
Source record: 119061

There is an article in "73 Amateur Radio Today" on a Handi-Finder DF kit.
The article says that the design is based on a circuit published for
use by the Coast Guard Auxiliary. Anyone have an idea where I can
find a copy of the paper that was published for the Coast Guard Auxillery?

Thanks

Felix Sawicki

1117. Re: Receiver questions ...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 20:11:41 UTC
From: alanb@sr.hp.com
Message-ID: <CI1K3H.8xt@srgenprp.sr.hp.com>
Source record: 119059

Victor Tavernini (tavernin@sun1.interlan.com) wrote:
: I just recently purchased a Ten-Tec Century 21 and I noticed that the
: receiver's sensitivity is rather poor (it's spec'd at 1uV) and I was
: wondering ...

: and it has no gain stage in from of the first mixer ... would a broadband
: preamp increase performance significantly!? Would the proper place
: to insert a preamp be between the T/R Switch and the Bandpass Filters?

For most applications, 1 uV is all you need on the HF bands (assuming
SSB-type IF bandwidth.) The only exceptions might be a very quiet location
on 10 meters when the band is quiet or when using the HF receiver with a
VHF/UHF converter that has inadequate IF gain.

: How much gain and what type of noise figure should the preamp have?

1 uV sensitivity, assuming 10 dB S/N and 2 kHz bandwidth, implies a
24 dB noise figure. To get this down to 10 dB NF (.2 uV sensitivity),
you could use a preamp with a 7 dB noise figure and 17 dB gain.

AL N1AL

1118. Re: Feedthrough Capacitors

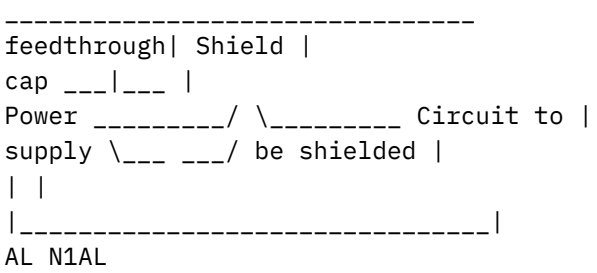
Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 20:23:09 UTC
From: alanb@sr.hp.com
Message-ID: <CI1KMM.9B1@srgenprp.sr.hp.com>
Source record: 119043

Matthew B Cravit (cravitma@cps.msu.edu) wrote:
: I have decided to try to build one of the 144 MHz amplifiers from the
: ARRL handbook, and came across a part which I don't think I ever saw
: before in my limited electronics background. Can someone please tell
: me what a feedthrough capacitor is, and why it would be used instead
: of a regular capacitor?

A feedthrough capacitor is built as a coaxial structure, where the
outer cylindrical body is one plate (contact) and the center conductor
(which has two contacts coming out opposite ends) is the other plate.

The advantage is that it has very low internal inductance when used
in bypass applications, typically for power supplies. Inductance
causes the capacitor to have a high impedance at high frequencies.

To get the low inductance, you must connect the power supply feed to
one end of the inner conductor and the circuit to be filtered to the
other end. The body is soldered or bolted directly to the shield that
the power supply lead passes through.



AL N1AL

1119. Wanna build a VLF receiver: Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-14 23:20:07 UTC
From: ka7oei@uugate.wa7slg.ampr.ORG
Message-ID: <38925@uugate.wa7slg.ampr.org>
Source record: 119030

Do you want a stand-alone receiver, or would a converter (to, say, an HF band) do the trick?

Also, what is it that you want to hear? Whistlers, OMEAGA, LORAN-C, the military's RTTY, LowFERs, NDB's?

(oops. OMEGA, not OMEAGA...)

What you are interested in hearing has a great bearing on what form the receiver would take.

I have some of the info you need, but it might help to narrow it down a tad...

73

<Clint>

ka7oei@uugate.wa7slg.ampr.org
clint@uugate.aim.utah.edu
ka7oei@wb7esh (MSYS)

1120. Guide to the Personal Radio Newsgroups

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-15 12:00:59 UTC
From: pschleck@unomaha.edu
Message-ID: <radio/personal-intro-1-755956855@unomaha.edu>
Source record: 119031
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.antenna,rec.radio.amateur.digital.misc,rec.radio.amateur.equipment,rec.radio.amateur.homebrew,rec.radio.amateur.policy,rec.radio.amateur.space,rec.radio.cb,rec.radio.info,rec.answers,news.answers

```
Posted-By: auto-faq 3.1.1.4
Archive-name: radio/personal-intro
Revision: 1.5 09/18/93 16:49:31
Changes: new mailing lists, .packet rmgroup, and .policy updates

(Note: The following is reprinted with the permission of the author.)

This message describes the rec.radio.amateur.*, rec.radio.cb, rec.radio.info,
and rec.radio.swap newsgroups. It is intended to serve as a guide for the new
reader on what to find where. Questions and comments may be directed to the
author, Jay Maynard, K5ZC, by Internet electronic mail at
jmaynard@oac.hsc.uth.tmc.edu. This message was last changed on 18 September
1993 to add the mailing lists for the new rec.radio.amateur newsgroups, to
note the rmgroup of rec.radio.amateur.packet, and to officially retire some
(in)famous threads of discussion on rec.radio.amateur.policy.

History
=======

Way back when, before there was a Usenet, the Internet hosted a mailing list
for hams, called (appropriately enough) INFO-HAMS. Ham radio discussions
were held on the mailing list, and sent to the mailboxes of those who had
signed up for it. When the Usenet software was created, and net news as we
now know it was developed, a newsgroup was created for hams: net.ham-radio.
The mailing list and the newsgroup were gatewayed together, eventually.

As the net grew, and as packet radio came into vogue, packet discussion began
to dominate other topics in the group and on the list. This resulted in the
logical solution: a group was created to hold the packet discussion, and
another corresponding mailing list was created as well: net.ham-radio.packet
and PACKET-RADIO, respectively.

These two groups served for several years, and went through Usenet's Great
Renaming essentially unchanged, moving from net.ham-radio[.packet] to
rec.ham-radio[.packet]. Readership and volume grew with the rest of the
network.

The INFO-HAMS mailing list was originally run from a US Army computer at
White Sands Missile Range, SIMTEL20. There were few problems with this
arrangement, but one was that the system was not supposed to be used for
commercial purposes. Since one of hams' favorite pastimes is swapping
gear, it was natural for hams to post messages about equipment for sale
to INFO-HAMS/rec.ham-radio. This ran afoul of SIMTEL20's no-commercial-use
restriction, and after some argument, a group was created specifically
```

for messages like that: rec.ham-radio.swap. This group wasn't gatewayed to a mailing list, thus avoiding problems.

While all this was happening, other folks wanted to discuss other aspects of the world of radio than the personal communications services. Those folks created the rec.radio.shortwave and rec.radio.noncomm newsgroups, and established the precedent of the rec.radio.* hierarchy, which in turn reflected Usenet's overall trend toward a hierarchical name structure.

The debate between proponents of a no-code ham radio license and its opponents grew fierce and voluminous in late 1989 and 1990. Eventually, both sides grew weary of the debate, and those who had not been involved even more so. A proposal for a newsgroup dedicated to licensing issues failed. A later proposal was made for a group that would cover the many recurring legal issues discussions. During discussion of the latter proposal, it became clear that it would be desirable to fit the ham radio groups under the rec.radio.* hierarchy. A full-blown reorganization was passed by Usenet voters in January 1991, leading to the overall structure we now use.

After the reorganization, more and more regular information postings began to appear, and were spread out across the various groups in rec.radio.*. Taking the successful example of the news.answers group, where informational postings from across the net are sent, the group rec.radio.info was created in December, 1992, with Mark Salyzyn, VE6MGS, initially serving as moderator.

In January, 1993, many users started complaining about the volume in rec.radio.amateur.misc. This led to a discussion about a second reorganization, which sparked the creation of a mailing list by Ian Kluft, KD6EUI. This list, which was eventually joined by many of the most prolific posters to the ham radio groups, came up with a proposal to add 11 groups to the rec.radio.amateur hierarchy in April 1993. The subsequent vote, held in May and early June, approved the creation of five groups: rec.radio.amateur.digital.misc (to replace .packet), .equipment, .homebrew, .antenna, and .space.

The Current Groups

I can hear you asking, "OK, so this is all neat history, but what does it have to do with me now?" The answer is that the history of each group has a direct bearing on what the group is used for, and what's considered appropriate where.

The easy one is rec.radio.amateur.misc. It is what rec.ham-radio was renamed to during the reorganization. Any message that's not more appropriate in one of the other groups belongs here, from contesting to DX to ragchewing on VHF to information on becoming a ham.

The group rec.radio.amateur.digital.misc is for discussions related to (surprise!) digital amateur radio. This doesn't have to be the common two-meter AX.25 variety of packet radio, either; some of the most knowledgeable folks in radio digital communications can be found here, and anything in the general area is welcome. The name was changed to emphasize

this, and to encourage discussion not only of other text-based digital modes, such as AMTOR, RTTY, and Clover, but things like digital voice and video as well. The former group, rec.radio.amateur.packet, should be removed by September 21st, 1993. It is obsolete, and you should use .digital.misc instead (or the appropriate new mailing list, mentioned below). The group has .misc as part of the name to allow further specialization if the users wish it, such as .digital.tcp-ip.

The swap group is now rec.radio.swap. This recognizes a fact that became evident shortly after the original group was formed: Hams don't just swap ham radio gear, and other folks besides hams swap ham equipment. If you have radio equipment, or test gear, or computer stuff that hams would be interested in, here's the place. Equipment wanted postings belong here too. Discussions about the equipment generally don't; if you wish to discuss a particular posting with the buyer, email is a much better way to do it, and the other groups, especially .equipment and .homebrew, are the place for public discussions. There is now a regular posting with information on how to go about buying and selling items in rec.radio.swap; please refer to it before you post there.

The first reorganization added two groups to the list, one of which is rec.radio.amateur.policy. This group was created as a place for all the discussions that seem to drag on interminably about the many rules, regulations, legalities, and policies that surround amateur radio, both existing and proposed. Recent changes to the Amateur Radio Rules (FCC Part 97) have finally laid to rest the Great Usenet Pizza Autopatch Debate as well as complaints about now-preempted local scanner laws hostile to amateurs, but plenty of discussion about what a bunch of rotten no-goodniks the local frequency coordinating body is, as well as the neverending no-code debate, may still be found here.

The other added group is rec.radio.cb. This is the place for all discussion about the Citizens' Band radio service. Such discussions have been very inflammatory in rec.ham-radio in the past; please do not cross-post to both rec.radio.cb and rec.radio.amateur.* unless the topic is genuinely of interest to both hams and CBers - and very few topics are.

The rec.radio.info group is just what its name implies: it's the place where informational messages from across rec.radio.* may be found, regardless of where else they're posted. As of this writing, information posted to the group includes Cary Oler's daily solar progagation bulletins, ARRL bulletins, the Frequently Asked Questions files for the various groups, and radio modification instructions. This group is moderated, so you cannot post to it directly; if you try, even if your message is crossposted to one of the other groups, your message will be mailed to the moderator, who is currently Mark Salyzyn, VE6MGS. The email address for submissions to the group is rec-radio-info@ve6mgs.ampr.ab.ca. Inquires and other administrivia should be directed to rec-radio-request@ve6mgs.ampr.ab.ca. For more information about rec.radio.info, consult the introduction and posting guidelines that are regularly posted to that newsgroup.

The groups rec.radio.amateur.antenna, .equipment, .homebrew, and .space are for more specialized areas of ham radio: discussions about antennas,

commercially-made equipment, homebrewing, and amateur radio space operations. The .equipment group is not the place for buying or selling equipment; that's what rec.radio.swap is for. Similarly, the .space group is specifically about amateur radio in space, such as the OSCAR program and SAREX, the Shuttle Amateur Radio EXperiment; other groups cover other aspects of satellites and space. Homebrewing isn't about making your own alcoholic beverages at home (that's rec.crafts.brewing), but rather construction of radio and electronic equipment by the amateur experimenter.

Except for rec.radio.swap and rec.radio.cb, all of these newsgroups are available by Internet electronic mail in digest format; send a mail message containing "help" on a line by itself to listserv@ucsd.edu for instructions on how to use the mail server.

All of the groups can be posted to by electronic mail, though, by using a gateway at the University of Texas at Austin. To post a message this way, change the name of the group you wish to post to by replacing all of the '.'s with '-'s - for example, rec.radio.swap becomes rec-radio-swap - and send to that name@cs.utexas.edu (rec-radio-swap@cs.utexas.edu, for example). You may crosspost by including multiple addresses as Cc: entries (but see below). This gateway's continued availability is at the pleasure of the admins at UT-Austin, and is subject to going away at any time - and especially if forgeries and other net.abuses become a problem. You have been warned.

A Few Words on Crossposting
==========

Please do not crosspost messages to two or more groups unless there is genuine interest in both groups in the topic being discussed, and when you do, please include a header line of the form "Followup-To: group.name" in your article's headers (before the first blank line). This will cause followups to your article to go to the group listed in the Followup-To: line. If you wish to have replies to go to you by email, rather than be posted, use the word "poster" instead of the name of a group. Such a line appears in the headers of this article.

One of the few examples of productive cross-posting is with the rec.radio.info newsgroup. To provide a filtered presentation of information articles, while still maintaining visibility in their home newsgroups, the moderator strongly encourages cross-posting. All information articles should be submitted to the rec.radio.info moderator so that he may simultaneously cross-post your information to the appropriate newsgroups. Most newsreaders will only present the article once, and network bandwidth is conserved since only one article is propagated. If you make regular informational postings, and have made arrangements with the moderator to post directly to the group, please cross-post as appropriate.

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"If my car ran OS/2, it'd be there by now" -- bumper sticker
GCS d++ p+ c++ l+ m+/- s/++ g++ w++ t+ r

--
73, Paul W. Schleck, KD3FU

pschleck@unomaha.edu

Celebrating 60 years of the Univ. of Maryland ARA - W3EAX (1933-1993)

1121. Spray-on shielding

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 01:01:58 UTC
From: samodena@csemail.cropsci.ncsu.edu
Message-ID: <1993Dec16.010158.16158@ncsu.edu>
Source record: 119032
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

Would anyone be able to steer me to a product and source for spray on shielding? Such as I see as a sprayed on black crinkle layer on the inside of plastic bezel parts on PCs...are there conductive-upon-drying spray (or dip) paints vailable?

Thanks,

Steve Modena (AB4EL) nmodena@unity.ncsu.edu

1122. VHF switching diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 10:06:21 UTC
From: andrew@pmms.cam.ac.uk
Message-ID: <1993Dec16.100621.2708@infodev.cam.ac.uk>
Source record: 119036

Following the recent PIN diode discussion, allow me this one.
I am no expert.

I am working on a circuit using BA482 diodes, described as
"VHF switching diodes". Who makes them? What are their specs?
Are they PIN diodes?

Thanks,
Andrew Thomason

1123. Re: Spray-on shielding

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 13:36:26 UTC
From: microtv@umich.edu
Message-ID: <microtv-161293083040@dowmac165.engin.umich.edu>
Source record: 119037

In article <1993Dec16.010158.16158@ncsu.edu>,
samodena@csemail.cropsci.ncsu.edu (S. A. Modena) wrote:

> Would anyone be able to steer me to a product and source for spray on
> shielding? Such as I see as a sprayed on black crinkle layer on the
> inside of plastic bezel parts on PCs...are there conductive-upon-
> drying spray (or dip) paints vailable?
>
> Thanks,
>
> Steve Modena (AB4EL) nmodena@unity.ncsu.edu

Miller-Stephenson Chemical Co. makes a product called MS-485 RFI Conductive Coating. This is a spray which can be used on plastics as well as metals. The spec sheet I have for it claims an attenuation range of 105 dB @ .150 MHz to 44 dB @ 1000 MHz for a 2 mil thickness.

My information is several years old, but may still be valid.

Miller Stephenson Chemical Co.
George Washington Highway
Danbury, Connecticut 06810
(203) 743-4447

1124. Re: VHF switching diodes

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 14:00:42 UTC
From: davies@mobira.nmp.nokia.com
Message-ID: <2eppma$g2h@noknic.nokia.com>
Source record: 119038

Andrew Thomason (andrew@pmms.cam.ac.uk) wrote:
> I am working on a circuit using BA482 diodes, described as
> "VHF switching diodes". Who makes them? What are their specs?
> Are they PIN diodes?

My Philips Quick Ref. Guide lists BA482 and a bandswitch diode, for VHF use, DO34 outline, rated Vr=35V max, If=100mA max, series impedance when switched on rRd=0.7ohm (running at 3mA forward current).

Sorry no more info that that, but Philips diodes data book (or Mullard, Elcoma, depending on age/intended-country of data book should give more info.

Regards, Steve Davies, davies@mobira.nmp.nokia.com

1125. Re: Spray-on shielding

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 14:26:19 UTC
From: "Paul Kasley"
Message-ID: <2epr6b$rnf@fnnews.fnal.gov>
Source record: 119040

In article <1993Dec16.010158.16158@ncsu.edu> samodena@csemail.cropsci.ncsu.edu (S. A. Modena) writes:
>Would anyone be able to steer me to a product and source for spray on
>shielding?...
>Steve Modena (AB4EL)

Try the Miller-Stephenson Chemical Co., George Washington Highway,
Danbury, CT, 06810, 203-743-4447. I believe they produce a conductive paint
that may fit you requirement.

Paul Kasley, wa9vyb

1126. Help! Looking for spread-spectrum video link!

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 15:51:36 UTC
From: ab176@FreeNet.Carleton.CA
Message-ID: <CI4xE0.AAG@freenet.carleton.ca>
Source record: 119034
Cross-posted to: rec.video,sci.electronics,rec.radio.amateur.homebrew

We are in need of a Spread-Spectrum video transmitter for a tele-robotics application. If you know of a company that builds or distributes such a beast, we would greatly appreciate your sharing this knowledge.

I can be reached at the above address, or at wmercer@canada.cdev.com, ph # 613-596-7807, fax: 613-596-7874.

--
VE3NFY - Wayne D. Mercer | Email: ab176@freenet.carleton.ca
Computing Devices Canada | work: (613)596-7807
PO Box 8508, MS 4140 | fax: (613)596-7874
Ottawa, Ontario, Canada K1G 3M9

1127. Re: Spray-on shielding

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 16:05:11 UTC
From: glenne@sad.hp.com
Message-ID: <CI4y0o.s2@srgenprp.sr.hp.com>
Source record: 119033
Cross-posted to: rec.radio.amateur.homebrew,sci.electronics

S. A. Modena (samodena@csemail.cropsci.ncsu.edu) wrote:
: Would anyone be able to steer me to a product and source for spray on
: shielding? Such as I see as a sprayed on black crinkle layer on the
: inside of plastic bezel parts on PCs...are there conductive-upon-
: drying spray (or dip) paints vailable?

Steve

I've used the MS-485 spray-on coating on fiberglass to make homemade
parabolic reflectors reflective. The MS stuff is nickle based and
doesn't give quite as high conductivity as silver based products but it
is certainly less expensive. They claim surface resistivity of
5 ohm per square when applied in a .002" layer. For RFI I expect it
would be just fine. It's also available in bulk.
It is black but not a crinkle finish, at least not the way I've used it.

73
Glenn Elmore n6gn

ax.25 n6gn@wx3k.#nocal.ca.usa.na
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

1128. chirping oscillator

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-16 21:31:26 UTC
From: majec@cactus.org
Message-ID: <1993Dec16.213126.9152@cactus.org>
Source record: 119042
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew,rec.radio.amateur.equipment

The Sad Tale of a Musical Oscillator, Or how I'll spend my Xmas vacation

Well, what that silly first line was meant to allude to was the fact that
I have a chirping, whooping, and generally being anything but, stable
oscillator.

As CW is my preferred form of rf emission this chirping oscillator just
won't cut it.

Here are the specifics.

The rig is a TEN-TEC pm2 (early 70's qrp rig) It's a direct conversion
style transceiver. "The oscillator used for receiving operates directly at
the frequency being received. This allows the same oscillator to be used for
transmitting. When the XTAL/VFO switch is placed in the VFO position,
it connects the receiving oscillator output in place of the crystal."

This is a fairly crude design in my opinion.The DPDT switch has single
conductor hookup wire going from the switch to the board (six of them)
about 2.5 inches long. The switch selects between 80m and 40m lc circuits
which feed the base of the bipolar transistor, the oscillator.
The oscillator is followed by a buffer and then the XTAL/VFO switch.
After the XTAL/VFO switch is the driver stage and the final.

That's it on the radio

Soooo, what how about suggestions on improving the stability of the
oscillator. By the way there is no shielding around the transistor section
of the oscillator, the inductor is in a metal can but that's it.

Any suggestions would be appreciated. I am going camping down into Mexico
and want to use my new (to me) VFO capable radio as opposed to my MXM
rock bound QRP rig.

Thanks in advance.

Ed Guinn
kb5ruf
majec@cactus.org

1129. Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 02:30:35 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Dec17.023035.27951@news.unomaha.edu>
Source record: 119039

Hello all! I am wondering if there is anyway I can add SSB to my Heathkit DX-60B (currently CW/AM) so I can do 10M SSB. I would prefer a "black box" between the transmitter and the antenna, although a hardware modification would be considered. If you have any ideas, please e-mail me at ncc2001@cwis.unomaha.edu or packet at N0YBC@WB0BLR.#SWIA.IA.USA.NOAM. Thanks.

73 de N0YBC Michael

--
Michael Fortner N0YBC	DOCTOR! DOCTOR! DOCTOR!...
Internet: ncc2001@cwis.unomaha.edu	Well, what's your problem?
Packet: N0YBC@WB0BLR.#SWIA.IA.USA.NA	My brain hurts!
	It'll have to come out then!

1130. Receiver for 10MHz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 06:49:03 UTC
From: haynes@cats.ucsc.edu
Message-ID: <2erkov$e1n@darkstar.UCSC.EDU>
Source record: 119041

I have need for a cheap, simple, easy to build WWV receiver. All I need
is their audio; and I figure the single frequency of 10MHz will be reliable
enough for my purposes. Anybody seen a construction article for this
sort of thing (maybe when the 30-meter ham band was new?)
--
haynes@cats.ucsc.edu
haynes@cats.bitnet

"Ya can talk all ya wanna, but it's dif'rent than it was!"
"No it aint! But ya gotta know the territory!"
Meredith Willson: "The Music Man"

1131. Re: Receiver for 10MHz?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 15:24:55 UTC
From: jfw@ksr.com
Message-ID: <37191@ksr.com>
Source record: 119045

haynes@cats.ucsc.edu (James H. Haynes) writes:
>I have need for a cheap, simple, easy to build WWV receiver. All I need
>is their audio; and I figure the single frequency of 10MHz will be reliable
>enough for my purposes. Anybody seen a construction article for this
>sort of thing (maybe when the 30-meter ham band was new?)

QST a couple of years back had a design for a "secondary frequency standard"
that consisted of the Neophyte receiver using a 10MHz crystal (with a variable
capacitor to trim it onto WWV) and a divider chain to turn the 10MHz frequency
into the usual comb frequency calibrator signal. Drop the divider and you
have what you asked for (if you don't mind zero-beating an AM signal); or
keep the divider and get two uses for the price of one :-).

John, WB7EEL

1132. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 15:27:59 UTC
From: rossi@VFL.Paramax.COM
Message-ID: <1993Dec17.152759.11973@VFL.Paramax.COM>
Source record: 119044

In article <1993Dec17.023035.27951@news.unomaha.edu> ncc2001@cwis.unomaha.edu (Michael Fortner) writes:
>Hello all! I am wondering if there is anyway I can add SSB to my
>Heathkit DX-60B (currently CW/AM) so I can do 10M SSB. I would prefer
>a "black box" between the transmitter and the antenna, although a
>hardware modification would be considered. If you have any ideas,
>please e-mail me at ncc2001@cwis.unomaha.edu or packet at

Converting a DX-60 to SSB would be like converting an AM radio into a TV set.

Not worth it. Easier to start over from scratch.

==========
Pete Rossi - WA3NNA rossi@vfl.paramax.COM

Unisys Corporation - Government Systems Group
Valley Forge Engineering Center - Paoli, Pennsylvania
==========

1133. Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 16:50:00 UTC
From: v087jsfu@ubvms.cc.buffalo.edu
Message-ID: <CI6un1.CxE@acsu.buffalo.edu>
Source record: 119046

Did anyone see the Ramsey 6m kit? The ad says a 12 year old did the 2m kit. It would be real embarrassing if I ordered one and couldn't get it to work. Does anyone do 6m? In our area there is about 7 repeaters. Would it be safe to say, that you would not find anyone or hardly anyone on them? If I got one, how do you check when the radio is good for DX? If the conditions for DX are good do the repeaters still work?

N2UPM
Dan

1134. Re:DF Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 18:12:37 UTC
From: janc@icebox.iceonline.com
Message-ID: <CI6Br5.1MK@iceonline.com>
Source record: 119047

>There is an article in "73 Amateur Radio Today" on a Handi-Finder DF kit.
>The article says that the design is based on a circuit published for
>use by the Coast Guard Auxiliary. Anyone have an idea where I can
>find a copy of the paper that was published for the Coast Guard Auxillery?
>

Actually, I seem to recall seeing an article about the same DF unit in an issue of (I think it was) CQ in the last year or so - no PCB layout, just the schematic and parts list. (If it wasn't CQ, then it was QST - do it cheap, go to your library and fumble around in the stacks <g>). Looking at the article in 73, I note that the circuit certainly does not cost to build anywhere near what the company producing the kits is charging.

Jan Chojnacki
VE7FJC

1135. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 18:19:54 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <2est8aINN1ri@abyss.West.Sun.COM>
Source record: 119048

In article <CI6un1.CxE@acsu.buffalo.edu> v087jsfu@ubvms.cc.buffalo.edu (Danny Anderson) writes:
>Did anyone see the Ramsey 6m kit? The ad says a 12 year old did the 2m
>kit. It would be real embarrassing if I ordered one and couldn't get it
>to work. Does anyone do 6m? In our area there is about 7 repeaters.
>Would it be safe to say, that you would not find anyone or hardly anyone
>on them? If I got one, how do you check when the radio is good for DX?
>If the conditions for DX are good do the repeaters still work?

I've built the Ramsey FX-440, and reviewed the 220 and 2m radio kit designs. They're quite mediocre. The spectral purity of the transmitted signal is variable and often not legal, and the receiver is extremely poor by modern standards.

For the $200 price tag of the kit and cabinet, you could buy a VHF lo-band Micor with a 60W output level, and four channels worth of crystals and elements. You'd have a considerably superior radio, though it would be larger and use crystals.

Alternatively, you could save your money up longer and buy an Azden mobile with many features the Ramsey doesn't have, including CTCSS, DTMF and a good receiver.

The Ramsey kits can be cleaned up to provide a clean transmitted signal, but the receiver will always be mediocre. Though Ramsey kits appear to be targeted at beginners, it requires much more than beginner skill to make the radios work reasonably.

Dana

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

1136. HELP: Looking for RF Sniffer design/kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 18:31:24 UTC
From: Nguyent@snowmass.ksc.nasa.gov
Message-ID: <1993Dec17.133124.1003@titan.ksc.nasa.gov>
Source record: 119051

I'm looking for info (circuit diag/designs, kits, etc) that can
be homebrewed and also not to much burnden on the pocket book?
Appreciate any reply directly to above Email addr or posting.

TNX
Tom
AD4NA

1137. Re: HELP: Looking for RF Sniffer design/kit

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 18:35:10 UTC
From: Nguyent@snowmass.ksc.nasa.gov
Message-ID: <1993Dec17.133511.1004@titan.ksc.nasa.gov>
Source record: 119049

IN the 2meter/440Mhz range and also HF.

In article <1993Dec17.133124.1003@titan.ksc.nasa.gov>, Nguyent@snowmass.ksc.nasa.gov (Tom) says:
>
>I'm looking for info (circuit diag/designs, kits, etc) that can
>be homebrewed and also not to much burnden on the pocket book?
>Appreciate any reply directly to above Email addr or posting.
>
>TNX
>Tom
>AD4NA

1138. Re: DF Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 18:43:14 UTC
From: trier@slc6.ins.cwru.edu
Message-ID: <2esuk2$e4m@usenet.INS.CWRU.Edu>
Source record: 119050

In article <CI6Br5.1MK@iceonline.com>,
Jan Chojnacki <janc@icebox.iceonline.com> wrote:
>(If it wasn't CQ, then it was QST - do it cheap, go to your library
>and fumble around in the stacks <g>).

The designer of the Handi-Finder wrote an article for QST about it.
I'm sure you could find it in the back issues.

You're right, it could probably be built bargain-basement if you have
the right scrap parts. Is there a single kit out there that isn't that
way?

What your money goes for in a kit is (1) instructions, (2) less time
spent scrounging parts, (3) less time spent preparing parts (4) lower
capital investment required for construction, (5) packaging, and (6) a
higher chance of successful construction. This is added value, and the
kit maker charges you for it.

If you think the kit maker charges too much for the added value, you
should build the thing from scratch. If you think the added value is
worth it, buy the kit. Just remember whether or not it's worth it is
a personal decision based on one's skills, resources, and junk box. :-)

Stephen

--
Stephen Trier KB8PWA "The light at the end of the tunnel
Work: trier@ins.cwru.edu may be an oncoming dragon"
Home: sct@po.cwru.edu - Unknown

1139. Re: chirping oscillator

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 19:55:02 UTC
From: alanb@sr.hp.com
Message-ID: <CI73Br.8G5@srgenprp.sr.hp.com>
Source record: 119052
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

Majec Systems (majec@cactus.org) wrote:

: I have a chirping, whooping, and generally being anything but, stable
: oscillator. As CW is my preferred form of rf emission this chirping
: oscillator just won't cut it.
:
: The rig is a TEN-TEC pm2 (early 70's qrp rig) It's a direct conversion
: style transceiver. ...

: This is a fairly crude design in my opinion.The DPDT switch has single
: conductor hookup wire going from the switch to the board (six of them)
: about 2.5 inches long. The switch selects between 80m and 40m lc circuits
: which feed the base of the bipolar transistor, the oscillator. ...

The long leads would likely cause mechanical instability, but not chirp
(except for a possibility mentioned below.)

What are you using for a power supply? If the power supply voltage is
not rock-solid when you key the transmitter, that could easily cause the
chirp. For a test, hook up the radio with short, fat leads to a car battery
or well-regulated power supply. If the chirp goes away, then that's the
problem.

: By the way there is no shielding around the transistor section
: of the oscillator, the inductor is in a metal can but that's it.

The long leads leading to the VFO tank could be picking up RF from the
power amplifier stage, which could cause chirp. Try shielding the entire
VFO (aluminum foil works for a temporary test) to see if that's the cause.
Check power supply bypassing -- RF can get into the VFO that way too.
One of those could easily bethe problem, since the power amplifier and
oscillator are on the same frequency in direct-conversion transceivers.

AL N1AL

1140. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 19:56:13 UTC
From: jmaca%jscdk@jesnic.jsc.nasa.gov
Message-ID: <1993Dec17.195613.4056@aio.jsc.nasa.gov>
Source record: 119053

In article <CI6un1.CxE@acsu.buffalo.edu> v087jsfu@ubvms.cc.buffalo.edu (Danny Anderson) writes:
>Did anyone see the Ramsey 6m kit? The ad says a 12 year old did the 2m
>kit. It would be real embarrassing if I ordered one and couldn't get it
>to work. Does anyone do 6m? In our area there is about 7 repeaters.
>Would it be safe to say, that you would not find anyone or hardly anyone
>on them? If I got one, how do you check when the radio is good for DX?
>If the conditions for DX are good do the repeaters still work?
>
>N2UPM
>Dan
>
Has anyone built the Ramsey 6m Rig. I have been considering building one
and would appreciate any feedback.

Thanks,

John Maca
NASA-Johnson Space Center
jmaca%jscdk@jesnic.jsc.nasa.gov

1141. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 20:18:16 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Dec17.201816.14925@news.unomaha.edu>
Source record: 119055

I do not think it is worthless to try to convert this piece of equipment. Many newer hams (myself included) can not afford the outragous prices of new and "newer" used equipment. However, we can afford and often enjoy modifying what we can afford. It is much better to take a piece of working electronics and keep it useful than have it take up space in a landfill.

73 de N0YBC Michael

--
Michael Fortner N0YBC	DOCTOR! DOCTOR! DOCTOR!...
Internet: ncc2001@cwis.unomaha.edu	Well, what's your problem?
Packet: N0YBC@WB0BLR.#SWIA.IA.USA.NA	My brain hurts!
	It'll have to come out then!

1142. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 20:18:36 UTC
From: alanb@sr.hp.com
Message-ID: <CI74F1.9CG@srgenprp.sr.hp.com>
Source record: 119054

Michael Fortner (ncc2001@cwis.unomaha.edu) wrote:
: Hello all! I am wondering if there is anyway I can add SSB to my
: Heathkit DX-60B (currently CW/AM) so I can do 10M SSB. I would prefer
: a "black box" between the transmitter and the antenna, although a
: hardware modification would be considered.

There was a box called the Heath SB-10 which converted a DX-100 or
Apache transmitter to SSB. With suitable modifications to the DX-60,
you could probably get it to work. It would not be a simple mod.

AL N1AL

1143. Re: chirping oscillator

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-17 21:12:07 UTC
From: fred-mckenzie@ksc.nasa.gov
Message-ID: <fred-mckenzie-171293160209@k4dii.ksc.nasa.gov>
Source record: 119056
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

In article <1993Dec16.213126.9152@cactus.org>, majec@cactus.org (Majec Systems) wrote:
> The Sad Tale of a Musical Oscillator, Or how I'll spend my Xmas vacation
> Well, what that silly first line was meant to allude to was the fact that
> I have a chirping, whooping, and generally being anything but, stable
> oscillator.

Ed-

I'm not familiar with the Ten-Tec, but other chirping oscillators have problems with voltage regulation, and unstable loads.

Aside from improving the voltage regulation, you might try leaving the oscillator on continuously during transmit, and keying a subsequent stage. In the latter days of vacuum tube transmitters, "grid-block" keying was used to accomplish that. Earlier transmitters put the key in the cathode of one of the later stages.

Other QRP transceivers have a circuit to slightly change the frequency of the VFO, to provide approximately 800 Hz offset between transmit and receive frequencies. If yours does this (and it probably does), that offset circuit may be contributing to the chirp.

ARRL has published a couple of volumes, containing summaries of QST Hints & Kinks related to problems with QRP rigs. If you have access to a store that carries them, you might take a look for your Ten-Tec.

73, Fred, K4DII

1144. Intercom info available from author

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-18 00:34:53 UTC
From: jmaynard@nyx10.cs.du.edu
Message-ID: <1993Dec18.003453.19358@mnemosyne.cs.du.edu>
Source record: 119057
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

A couple of months or so ago I mentioned that there were plans running around for a homemade VOX intercom that was designed for aircraft use, but would also be useful for multiop contesting. I've finally found the info again.

If you're interested, drop email to Dave Allen, WB0TAQ, at davea@col.hp.com. He'll pass along an ASCII schematic, parts list, and information document. The folks who have built it so far report good success with it, although Dave cautions that some extra bypassing may be necessary in a high-RF environment. I haven't built it yet, though it's on my list of things for the next Field Day...

--
Jay Maynard, EMT-P, K5ZC, PP-ASEL | Never ascribe to malice that which can
jmaynard@oac.hsc.uth.tmc.edu | adequately be explained by stupidity.
"A good flame is fuel to warm the soul." -- Karl Denninger

1145. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-19 01:21:10 UTC
From: rich@mulvey.com
Message-ID: <1993Dec19.012110.29136@mulvey.com>
Source record: 119058

Danny Anderson (v087jsfu@ubvms.cc.buffalo.edu) wrote:
: Did anyone see the Ramsey 6m kit? The ad says a 12 year old did the 2m
: kit. It would be real embarrassing if I ordered one and couldn't get it
: to work. Does anyone do 6m? In our area there is about 7 repeaters.
: Would it be safe to say, that you would not find anyone or hardly anyone
: on them? If I got one, how do you check when the radio is good for DX?
: If the conditions for DX are good do the repeaters still work?

Dan:

Ramsey kits are generally considered to be bottom-of-the-barrel quality,
especially when you consider that they tend to have lots and lots of
spurious emissions, without (undocumented) modifications. They can
be useful as a starting point for parts, etc, but don't expect to get
a rig that meets FCC standards without some redesigning.

- Rich

--
Rich Mulvey Amateur Radio: N2VDS Rochester, NY
rich@mulvey.com "QRP is not for sissies"

1146. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 02:34:00 UTC
From: john.lockridge@loebbs.com
Message-ID: <519.784.uupcb@loebbs.com>
Source record: 119066

On 'Date: Sun, 19 Dec 1993 01:21:10 GMT'
In a message concerning 'Subject: Re: Ramsey 6m'
'rich@mulvey.com' wrote

'Ramsey kits are generally considered to be bottom-of-the-barrel
quality, ...'

The above comment leaves me with the following question which I
hope has a positive answer. Where can I find a kit or a series of kits
for good quality 6m equipment (receivers, transmitters, and/or
tranceivers)?

John (john.lockridge@loebbs.com)

+---+
| LAND OF ENCHANTMENT BBS! Albuquerque, New Mexico (USA) (505) 857-0836 |
| MS-DOS/OS-2/Windows - 60M a month! U'NI/Intelec/ILink/Basenet/P.E.N. |
+---+

1147. Re: Re:DF Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 03:26:11 UTC
From: sawicki@vnet.IBM.COM
Message-ID: <19931219.192652.109@almaden.ibm.com>
Source record: 119063

Thanks Jan.

Felix Sawicki

1148. Re: DF Question

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 03:32:03 UTC
From: sawicki@vnet.IBM.COM
Message-ID: <19931219.193729.338@almaden.ibm.com>
Source record: 119064

>If you think the kit maker charges too much for the added value, you
>should build the thing from scratch. If you think the added value is

Stephen, the reason for the query was not to beat the author out of
a kit fee (all $27). I was interested in finding out how the circuit
worked (I'm pretty new to this stuff).

Thanks,

Felix Sawicki

1149. - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 06:36:50 UTC
From: quixote@eskimo.com
Message-ID: <CIBMDI.MsI@eskimo.com>
Source record: 119065
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

I would be interested in obtaining some device which would
disrupt television reception around my apartment. If they
are not so complicated, I imagine that with some patience,
one could build one, but I do not even know the range of
frequencies used by commercial television radio waves.

The intended use of this device is to be put with a timer
against the wall where my new neighbor has his television set.
He comes home around midnight and keeps his television
loud until 3 am almost every day. I wonder about the legality
of my idea, therefore I would like something with regulated
signal strength since I would not like to affect other neighbors.

Any information about where one can buy these devices or where
one can find a simple circuit to make one, (I know very little about
radio or electronics), will be greatly appreciated.

Thanks,
Carlos.

1150. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 11:49:40 UTC
From: jeh@cmkrnl.com
Message-ID: <1993Dec20.044940.3260@cmkrnl.com>
Source record: 119067
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIBMDI.MsI@eskimo.com>, quixote@eskimo.com (Looking for Sancho) writes:
> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.

Deliberately causing interference is definitely illegal under FCC regs, and may also constitute harrassment, etc., under local laws.

Have you tried talking to your neighbor? And/or to your apartment manager? The clown doesn't necessarily have to be convinced to turn it off; simply moving the set to a non-adjoining wall will make a vast improvement. A request phrased as "I can't sleep at night any more" might work better than just "it's too loud".

There ARE things you could do, especially if the set is really shoved up against a common wall with your apt., but if you know that little about electronics your chances of building anything and getting it working are slim to none. There are RF generators available with the appropriate frequency range, but their output is low (they're intended for direct connection to a device being tested) and they won't have much effect if the guy is watching cable or playing a tape on the VCR.

If the set is remote-controlled, you could always get a universal remote and try to turn the set off from outside his window. :-)

--- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

1151. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 16:03:31 UTC
From: kenh@w8hd.org
Message-ID: <2f4icj$7mg@w8hd.w8hd.org>
Source record: 118977
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

quixote@eskimo.com (Looking for Sancho) writes:

> I would be interested in obtaining some device which would
> disrupt television reception around my apartment. If they
> are not so complicated, I imagine that with some patience,
> one could build one, but I do not even know the range of
> frequencies used by commercial television radio waves.

> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.

> Any information about where one can buy these devices or where
> one can find a simple circuit to make one, (I know very little about
> radio or electronics), will be greatly appreciated.

The power of your device is of little concern; you would be, as the FCC would consider, maliciously interfering with a federally licensed facility.

Although I empathcise with your position, you would be considered the bad guy here.....

--
kenh@w8hd.org
Ken Hoehn - Teletech, Inc. Compuserve: 70007,2374
N8NYO P.O.Box 924 FAX: (313) 562-8612
Dearborn, MI 48121 VOICE: (313) 562-6873

1152. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 18:40:51 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <2f4rjkINN33d@abyss.West.Sun.COM>
Source record: 118968

In article <519.784.uupcb@loebbs.com> john.lockridge@loebbs.com (John Lockridge) writes:
>On 'Date: Sun, 19 Dec 1993 01:21:10 GMT'
>In a message concerning 'Subject: Re: Ramsey 6m'
>'rich@mulvey.com' wrote
>
>'Ramsey kits are generally considered to be bottom-of-the-barrel
>quality, ...'
>
>The above comment leaves me with the following question which I
>hope has a positive answer. Where can I find a kit or a series of kits
>for good quality 6m equipment (receivers, transmitters, and/or
>tranceivers)?

Probably the most encouraging answer is that you can buy old
Motorola and GE commercial radio gear quite inexpensively and
get the manuals from the vendors and use these excellent radios
as platforms for your own experimentation. If all you want is a
radio to yak on 6m, you can order crystals or PROMs and
tweak the radio up on 6m.

Besides that, I know of no quality kits for 6m FM gear. Ramsey
is cheese, pure and simple.

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

1153. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 19:32:12 UTC
From: chrisc@gold.gvg.tek.com
Message-ID: <7870@gold.gvg.tek.com>
Source record: 118969
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIBMDI.MsI@eskimo.com> quixote@eskimo.com (Looking for Sancho) writes:
> I would be interested in obtaining some device which would
> disrupt television reception around my apartment. If they
> are not so complicated, I imagine that with some patience,
> one could build one, but I do not even know the range of
> frequencies used by commercial television radio waves.

This is against the law.

It sems that your neighbor works a late shift and his "normal" television
viewing time disrupts your sleep.

Talk to your neighbor. Be sure you explain that it's the volume of
his set and not his rights to use his set.....

--
D.R. "Chris" Christensen Grass Valley Group (the day job)
chrisc@gold.gvg.tek.com P.O. Box 1114 mail Stop N32B
916-478-3419 FAX 916-478-3887 Grass Valley, CA 95945
Neither I nor my employer is responsible for anything I say or do.

1154. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 21:43:20 UTC
From: clarsean@cwis.isu.edu
Message-ID: <2f569o$qr6@cwis.isu.edu>
Source record: 118970
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

You ought to get a VCR tape and record "Fuck You Bob And your Goddamned Noisy TV!!!" and modulate it onto his favorite channel.

1155. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 22:37:25 UTC
From: jeg7e@lambda.itc.Virginia.EDU
Message-ID: <CICuuD.Lr3@murdoch.acc.Virginia.EDU>
Source record: 118971
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <1993Dec20.044940.3260@cmkrnl.com>, <jeh@cmkrnl.com> wrote:
>In article <CIBMDI.MsI@eskimo.com>, quixote@eskimo.com (Looking for Sancho)
> writes:
>> The intended use of this device is to be put with a timer
>> against the wall where my new neighbor has his television set.
>> He comes home around midnight and keeps his television
>> loud until 3 am almost every day. I wonder about the legality
>> of my idea, therefore I would like something with regulated
>> signal strength since I would not like to affect other neighbors.

I was raised in foster homes and such, usually with at least 8 other kids.
Choosing what to watch on the TV could be a grand political process, and
often my interests were not well represented in the choice.

I built (from a kit, I can't remember which manufacturer) a 'television
disruptor' which was a small circuit that nicely mounted into a matchbox
sized unit with a small wire antenna protruding. It had a thumbwheel tuner.
the whole affair was very tiny, easily concealed in the hand or pocket, it
used a 9v battery. The kit cost about $4.95 or something...

I loved this thing. Used strategically it would somehow occur that the only
stations that would come in some nights carried programming that was suited
to my tastes.

Thanks for provoking a pleasant memory... :)

--
Any opinions expressed herein are not necessarily those of The University.

\ \ / Jon Gefaell, Computer Systems Engineer | Amateur Radio, KD4CQY
\/\/ A UNIX guy doing Netware - ITC/Carruthers | -Will chmod for Food-
\/ The University of Virginia, Charlottesville | Hacker@Virginia.EDU
~~~~~~
~~~~~~

1156. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-20 22:41:40 UTC
From: jeg7e@lambda.itc.Virginia.EDU
Message-ID: <CICv1G.LvE@murdoch.acc.Virginia.EDU>
Source record: 118972
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <2f569o$qr6@cwis.isu.edu>,
CLARK_SEAN_M <clarsean@cwis.isu.edu> wrote:
>You ought to get a VCR tape and record "Fuck You Bob And your Goddamned
>Noisy TV!!!" and modulate it onto his favorite channel.

Get a social grace...

The poor fellow probably doesn't get home until around midnight and just
wants to unwind with the cathode ray brain cleaner....

He probably really has no idea that he is disturbing you. Consider a pleasant
hello next time you see him going in or out or just dropping by to introduce
yourself as a neighbour. That would be a good time to say something like "Hey,
when you come home at midnight and watch TV it keeps me awake because your TV
and my bed are right across a wall. I was hoping maybe you could find a way
to help deal with this problem, maybe turn the TV down, or even move it to the
other side of the room?"

Might even make a friend, go figure....
--
Any opinions expressed herein are not necessarily those of The University.

\ \ / Jon Gefaell, Computer Systems Engineer | Amateur Radio, KD4CQY
\/\/ A UNIX guy doing Netware - ITC/Carruthers | -Will chmod for Food-
\/ The University of Virginia, Charlottesville | Hacker@Virginia.EDU
~~~~~~
~~~~~~

1157. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 02:44:57 UTC
From: landisj@drager.com
Message-ID: <009774D81F6FFD20.24E058BA@drager.com>
Source record: 118973

myers@sunspot.West.Sun.COM (Dana Myers) writes ...
>Subject:Re: Ramsey 6m
>Date: 17 Dec 1993 18:19:54 GMT
>Message-ID:<2est8aINN1ri@abyss.West.Sun.COM>

stuff about Ramsey 6M kit deleted...

>For the $200 price tag of the kit and cabinet, you could buy a
>VHF lo-band Micor with a 60W output level, and four channels
>worth of crystals and elements. You'd have a considerably
>superior radio, though it would be larger and use crystals.

Where does one get these Micor radios? I've read several references to them
on the net. Never seen them at a hamfest. Also, are there hi band units
available? Are they convertable to 2M?

Thanks in advance,
Joe - AA3GN
(landisj@drager.com)

1158. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 03:02:02 UTC
From: n4hy@runner.ccr-p.ida.org
Message-ID: <N4HY.93Dec21030202@runner.ccr-p.ida.org>
Source record: 118976
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

Not to mention that he probably has cable and this entire discussion is
then moot. He would have to have a might big transmitter, in which case
the FCC would be knocking soon. They might let a few FM pirates get buy,
but start transmitting big watts in TV and you'll get their attention
in a hurry. The other way would be to prick the coax but that is vandalism
involving lengthy legal/civil proceedings.

Go tell your building super to sit on the guy in a nice way.

Bob

--
Robert W. McGwier | n4hy@ccr-p.ida.org Interests: ham radio,
Center for Communications Research | scouts, astronomy, golf (o yea, & math!)
Princeton, N.J. 08520 | ASM Troop 5700, ACM Pack 53 Hightstown
(609)-279-6240(v) (609)-924-3061(f)| I used to be a Buffalo . . . NE III-120

1159. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 04:47:26 UTC
From: myers@cypress.West.Sun.COM
Message-ID: <2f5v4uINN3e2@abyss.West.Sun.COM>
Source record: 118974

In article 24E058BA@drager.com, landisj@drager.com (Joe Landis - Systems/Network Mgr. - x2621) writes:
>myers@sunspot.West.Sun.COM (Dana Myers) writes ...
>>Subject:Re: Ramsey 6m
>>Date: 17 Dec 1993 18:19:54 GMT
>>Message-ID:<2est8aINN1ri@abyss.West.Sun.COM>
>
>stuff about Ramsey 6M kit deleted...
>
>>For the $200 price tag of the kit and cabinet, you could buy a
>>VHF lo-band Micor with a 60W output level, and four channels
>>worth of crystals and elements. You'd have a considerably
>>superior radio, though it would be larger and use crystals.
>
>Where does one get these Micor radios? I've read several references to them
>on the net. Never seen them at a hamfest. Also, are there hi band units
>available? Are they convertable to 2M?

OK.... I don't have time to answer this question in detail but I will take a short crack at it. In time, I promise, I will provide a FAQ on using commercial gear on amateur bands.

You need to find out who deals in surplus two-way radio gear in your area. It really helps if you meet a local enthusiast that "knows the ropes". There are good units and there are bad units for amateur use; only gurus know how to identify which is which. It usually has to do with the ability to read part numbers stamped on the PC boards. Also, the type of radio you want will vary with respect to your application; some radios are phase modulated and good for voice and 1200 baud packet, while others are direct-FM and good for voice, 1200 baud and 9600 baud packet.

Another place to look is a two-way radio shop. They often have mobiles for sale, but I've found the prices tend to be higher than a good surplus yard.

There are people that advertise in rags like Nuts and Volts that have good stuff; I don't recall the name or number, but the gent that advertises every month in Nuts/Volts from Rialto, CA offers some good deals on complete mobile combinations. Last I spoke to him he had Lo-band high-split VHF mobiles which directly tune to 6m, 60W, for $75 including a pair of channel elements and a control head,etc.

Yes, there are VHF Hi-band units around that tune directly to 2m. You really want the Hi-band Lo-split 138-150Mhz radios; "converting" these involves ordering the correct crystals, installing them in the channel elements, and following the tuning directions in the service manual. Oh! Don't be a cheapskate! Buy or borrow the service manual! *DO* follow the directions in the service manual. I've also found that 150-162Mhz radios will often work down to 146Mhz, but

it is a crap shoot.

I'm not an exalted guru, but I do have access to many Motorola and GE manuals,
which makes me a guru, so I can answer questions about part numbers as time permits.

Now... back to the GM300 I'm setting up on packet...

:-)

---
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

1160. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 05:42:34 UTC
From: drenze@icaen.uiowa.edu
Message-ID: <1993Dec21.054234.23018@icaen.uiowa.edu>
Source record: 118975
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

quixote@eskimo.com (Looking for Sancho) writes:

> I would be interested in obtaining some device which would
> disrupt television reception around my apartment. If they
> are not so complicated, I imagine that with some patience,
> one could build one, but I do not even know the range of
> frequencies used by commercial television radio waves.

> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.

> Any information about where one can buy these devices or where
> one can find a simple circuit to make one, (I know very little about
> radio or electronics), will be greatly appreciated.

Heh...very illegal little idea you have here, Carlos. The FCC disapproves
greatly of this sort of thing. Have you tried a few alternatives?

1 Talking to the neighbor? Does he *realize* this bothers
you?
2 If (1) has failed, have you talked to the apartment manager?
If you point out to him that this is disruptive, odds are he'll
say something to your neighbor.
3 If (2) has failed, call the cops and swear out a complaint.

These'll work better than jamming his TV reception (especially if he happens
to have cable). Not to mention if you get caught, it's better'n a $10K fine,
I think.

--
__ /| | Doug Renze, N0YVW | Don't believe what your eyes are telling
\'o.O' | +1 319 339 7814 | you! All they show is limitation. Look
=(___)= | drenze@icaen.uiowa.edu | with your understanding, find out what you
U | Douglas-Renze@uiowa.edu | already know, and you'll see the way to fly.

1161. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 08:16:27 UTC
From: dallas@spectrx.saigon.com
Message-ID: <5HFwec7w165w@spectrx.saigon.com>
Source record: 118978
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

quixote@eskimo.com (Looking for Sancho) writes:

> I would be interested in obtaining some device which would
> disrupt television reception around my apartment. If they
> are not so complicated, I imagine that with some patience,
> one could build one, but I do not even know the range of
> frequencies used by commercial television radio waves.
>
> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.
>
> Any information about where one can buy these devices or where
> one can find a simple circuit to make one, (I know very little about
> radio or electronics), will be greatly appreciated.
>
> Thanks,
> Carlos.

well i rember a long time ago seeing a ad in Popular Sci. for one but it said
it was ilegal to use it to jam T.V.'s,it was suposed to be used as somthing
eles can't rember what,if i can find the magazine i'll give you address of the
company

--
dallas@spectrx.saigon.com (dallas)
SPECTROX SYSTEMS +1.408.252.1005 Cupertino, Ca

1162. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 11:44:09 UTC
From: Iain.Laskey@barclays.co.uk
Message-ID: <CIDv9M.Hq@barclays.co.uk>
Source record: 118979
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <5HFwec7w165w@spectrx.saigon.com>, dallas@spectrx.saigon.com (dallas) writes:
|> quixote@eskimo.com (Looking for Sancho) writes:
|> > I would be interested in obtaining some device which would
|> > disrupt television reception around my apartment. If they
|> > are not so complicated, I imagine that with some patience,
|> > one could build one, but I do not even know the range of
|> > frequencies used by commercial television radio waves.
Why not ask him to turn it down? If he's not the sort of person who listens to
reasonable requests, do you not have local noise-pollution laws? If so you caould
report him for anti-social behaviour/being too loud.

--
+---------------+---+
Iain R Laskey	Atari Falcon - The best upgrade I ever made!
	Laserdisc & Pro-Logic - The only way to watch movies
	Replies to ilaskey@cix.compulink.co.uk
+---------------+---+

1163. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 14:32:19 UTC
From: lkollar@nyx10.cs.du.edu
Message-ID: <1993Dec21.143219.4967@mnemosyne.cs.du.edu>
Source record: 118980
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

I've seen electric motors, even battery-powered ones, do all sorts of
interesting things to TV reception. Cheap ones that smell like ozone
when they're running are best for this application. (Hint: lots of
sparks.)

ObHam: I clobber my own TV every time I key up the 2m rig, even at
1 watt power into a Ringo. I suspect I'm overloading the mast-mounted
Rat Shack preamp, but putting an open stub (matched for 2m) on the preamp
didn't seem to help.... It annoys my wife to no end, but she's the only
one in the house that watches broadcast TV (I usually don't bother and
the kids use the VCR to control their own programming).

Reminding everyone not to contact me on 2m while "Doctor Quinn" is on, I am --
--
Larry Kollar, KC4WZK | I like CW, but that doesn't mean I think every ham
lkollar@nyx.cs.du.edu | should have to learn it.
"On the Internet, nobody knows you're a dog."

1164. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 15:31:05 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec21.153105.9958@ke4zv.atl.ga.us>
Source record: 118981

In article <009774D81F6FFD20.24E058BA@drager.com> landisj@drager.com (Joe Landis - Systems/Network Mgr. - x2621) writes:
>
>Where does one get these Micor radios? I've read several references to them
>on the net. Never seen them at a hamfest. Also, are there hi band units
>available? Are they convertable to 2M?

You go to the wrong hamfests. :-)

There are usually *stacks* of Motorola Micors and GE Mastr series radios at all the hamfests I attend. Low band units are often dirt cheap, but the high band and UHF rigs are starting to command premium prices. Also, newer Motorola surplus is now becoming more popular as the supply of Micors being taken out of service begin to run out.

Gary
--
Gary Coffman KE4ZV | I kill you, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | You kill me, | uunet!rsiatl!ke4zv!gary
534 Shannon Way | We're the Manson Family | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | -sorry Barney |

1165. Re: Ramsey 6m/Micor/surplus

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 20:33:13 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec21.203313.54793@yuma.ACNS.ColoState.EDU>
Source record: 118982

In article <1993Dec21.153105.9958@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>In article <009774D81F6FFD20.24E058BA@drager.com> landisj@drager.com (Joe Landis - Systems/Network Mgr. - x2621) writes:
>>Where does one get these Micor radios? I've read several references to them
>You go to the wrong hamfests. :-)
********** Deletions ***********
>newer Motorola surplus is now becoming more popular as the supply of Micors
>being taken out of service begin to run out.
>Gary

I've read where the FCC is going to limit deviation to half of what it is now in the business bands. The article goes on to claim this will create a ' xx billion dollar economic stimulus' when everybody replaces their equipment, dumping tons of the used stuff on the surplus market. It sounds like it's just the VHF and UHF bands, so probably no 6m capable stuff.
Food for thought,
Galen, KF0YJ

1166. Re: Ramsey 6m

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-21 20:43:38 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <2f7n5qINN3s1@abyss.West.Sun.COM>
Source record: 118983

In article <1993Dec21.153105.9958@ke4zv.atl.ga.us> gary@ke4zv.atl.ga.us (Gary Coffman) writes:
>In article <009774D81F6FFD20.24E058BA@drager.com> landisj@drager.com (Joe Landis - Systems/Network Mgr. - x2621) writes:
>>
>>Where does one get these Micor radios? I've read several references to them
>>on the net. Never seen them at a hamfest. Also, are there hi band units
>>available? Are they convertable to 2M?
>
>You go to the wrong hamfests. :-)
>
>There are usually *stacks* of Motorola Micors and GE Mastr series radios
>at all the hamfests I attend. Low band units are often dirt cheap, but
>the high band and UHF rigs are starting to command premium prices. Also,
>newer Motorola surplus is now becoming more popular as the supply of Micors
>being taken out of service begin to run out.

Keep in mind that most commercial radios come in more flavors than just "VHF Lo-band", "VHF Hi-band" and "UHF". Each band comes in "splits", for example, 138-150Mhz, 150-162Mhz and 162-174Mhz. Usually, the most critical difference between splits is the tuning range of the receiver front end filter, but the exciter and power amplifier modules also can be specified for splits. Exciters and power amplifiers often can be easily modified to change splits, but receiver filters are mechanical helical resonators, and are much harder to reliably change. At the same time, the 150-162 split will often tune (i.e. peak) on the 2m amateur band.

Now that many agencies are converting to trunked radio, conventional VHF, UHF and 800/900 MHz mobiles are showing up more and more. Anything built in the 1980s is usually going to be synthesized with a PROM to select channels, more modern stuff is programmed with a computer. Don't let this stuff frighten you; I've seen people turn down a complete Syntor UHF mobile in cherry condition for $50 because it uses a PROM. Heck, the PROM can often be had for maybe $50 from an authorized Motorola dealer, you get sixteen or more channels. I have three MCX100 VHF high-band mobiles that I bought and got programmed for under $100; these particular models are excellent voice/packet rigs.

Note: just like amateur radios, there are good synthesized commercial and less good synthesized commercial radios. For example, my MCX100s are "Fast-Lok", they lock up in 3mS, where the normal model takes 100mS to lock up. Neither radio, by the way, has the annoying 5kHz ring that most modern amateur radios do.

>
>Gary
>--
>Gary Coffman KE4ZV | I kill you, | gatech!wa4mei!ke4zv!gary
>Destructive Testing Systems | You kill me, | uunet!rsiatl!ke4zv!gary
>534 Shannon Way | We're the Manson Family | emory!kd4nc!ke4zv!gary
>Lawrenceville, GA 30244 | -sorry Barney |

--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

1167. Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 00:09:11 UTC
From: jdc3538@ultb.isc.rit.edu
Message-ID: <1993Dec22.000911.9923@ultb.isc.rit.edu>
Source record: 118984

Have any of you folks tried the Mini-Circuits MAR-6 as a 2-meter (or other ham band) preamp? It has 50 ohm input/outputs, and looks like very few parts are needed. Are they any good? Is there anything special to watch out for?

73...Jim
N2VNO

1168. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 04:08:33 UTC
From: dmiller@crl.com
Message-ID: <2f8h82$ipb@crl.crl.com>
Source record: 118985

J.D. Cronin (jdc3538@ultb.isc.rit.edu) wrote:

: Have any of you folks tried the Mini-Circuits MAR-6 as a 2-meter (or
: other ham band) preamp? It has 50 ohm input/outputs, and looks like
: very few parts are needed. Are they any good? Is there anything
: special to watch out for?

Yep. Amps like these that are already matched for 50 ohms are actually somewhat undesirable for pre-amp use because unless you transform up to a higher impedance in your input circuitry before you transform back down, the pre-amp will be very broadband. Strong signals in the FM, AM, HF, you name it band could create real havoc for you. The only real selectivity you will have to protect you from intermod will be the antenna itself.

Your situation will determine if you can use one of these. If you are not in an urban area -- maybe no problem. I would lean towards a FET device with a higher Q input matching network.

73's Don Miller KM4AS dmiller@crl.com

1169. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 05:26:17 UTC
From: markm@xetron.com
Message-ID: <CIF8Ft.CEq@xetron.com>
Source record: 118986
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIBMDI.MsI@eskimo.com> quixote@eskimo.com (Looking for Sancho) writes:
> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.

If it's right up against the wall, you could get a really big magnet, like from a 12" woofer or bigger. You could make a large electromagnet too. Then, stand right at the closest point to his TV and move the magnet around a whole bunch. It should make his picture wave around enough to make him think he's sleepy or to just make him scratch his head.

Fun to do to people's computer monitors too. And no FCC violation involved.

- Mark Malson
markm@xetron.com

1170. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 05:40:58 UTC
From: n4tii@kd4nc.uucp
Message-ID: <1993Dec22.054058.6238@kd4nc.uucp>
Source record: 118987
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

Iain.Laskey@barclays.co.uk writes:

>In article <5HFwec7w165w@spectrx.saigon.com>, dallas@spectrx.saigon.com (dallas) writes:
>|> quixote@eskimo.com (Looking for Sancho) writes:

Carlos....I'll spare you the legalities and all the ubbub about telling him
to tun down hiw TV.... go get your a Popular Science magazine and check the
back... there is some place that sells the very thing you want in kit form.
Yes...this would be illegal to INTENTIONALLY disrupt his tv....but you never
should have told the net that was your intention.... either way, go get
you a Pop Science and check the classifieds....have fun! Don't get
beat up by your neighbor when he catches you!!! (grin)

John

>|> > disrupt television reception around my apartment. If they
>|> > are not so complicated, I imagine that with some patience,
>|> > one could build one, but I do not even know the range of
>|> > frequencies used by commercial television radio waves.
>Why not ask him to turn it down? If he's not the sort of person who listens to
>reasonable requests, do you not have local noise-pollution laws? If so you caould
>report him for anti-social behaviour/being too loud.

>--
>+---------------+---+
>| Iain R Laskey | Atari Falcon - The best upgrade I ever made! |
>| | Laserdisc & Pro-Logic - The only way to watch movies |
>| | Replies to ilaskey@cix.compulink.co.uk |

IC
C>+---------------+---+

1171. Two meter monitor from NEW Radio Shack WX cube?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 14:49:14 UTC
From: os2user@vmdoug.utsd.att.com
Message-ID: <1993Dec22.144914.27156@devildog.att.com>
Source record: 118995

Has anyone taken a look at Radio Shack's NEW Weather Cube?
Several years ago they used to have a weather cube that
you could modify to serve as a dedicated monitor for one
or two frequencies on the two meter band (I think the
mod was in QST, anyone know the year and issue?) I'm pretty
sure it was just a trivial modification too (add a capacitor
and tune it??)

The big question:

Does anyone know if the NEW weather cube COULD be (easily)
modified to receive two meters? Same procedure as the old
one? Anyone tried it?

Douglas Quagliana KA2UPW
dquagliana@attmail.com

1172. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 16:07:12 UTC
From: ghg@noose.ecn.purdue.edu
Message-ID: <CIG241.tA@noose.ecn.purdue.edu>
Source record: 118988
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIF8Ft.CEq@xetron.com> markm@xetron.com (Mark Malson) writes:
>In article <CIBMDI.MsI@eskimo.com> quixote@eskimo.com (Looking for Sancho) writes:
>> The intended use of this device is to be put with a timer
>> against the wall where my new neighbor has his television set.
>
>If it's right up against the wall, you could get a really big magnet,
>like from a 12" woofer or bigger. You could make a large electromagnet
>too. Then, stand right at the closest point to his TV and move the
>magnet around a whole bunch. It should make his picture wave around
>enough to make him think he's sleepy or to just make him scratch his
>head.
>
>Fun to do to people's computer monitors too. And no FCC violation
>involved.
>
>- Mark Malson
> markm@xetron.com
>
Make a large coil of wire, 10 turns or so #16 or so size , cover your
entire wall which faces the enemy with this loop. Get a "variac"
(variable autotransformer from radio shaft or a ham fest). Connect
that to a 120V to 6V or 12V step down transformer. You need A/C,
not DC out.. If you cobble up an old battery charger, take out the
rectifier and go off the AC from the transformer secondary..

Turn up the juice slowly until the wire gets a little warm.. The
resultant magnetic field should affect CRTs for 20 feet or so
and will make them "flicker", as the shadow mask vibrates and
from direct effect on the electron beam. It is not powerful enough
to erase tapes, etc.

If all out war results, then you may have to resort to the following:

How about a 10' diameter coil of wire, such as lampcord (single conductor),
maybe 100-200 turns? You could probably get by with #22 or such, it
would be cheaper.. then pick up some surplus large high voltage
electrolytic Capacitors.. say 2000 mfd @ 450 VDC. Charge that baby off
some power supply, and discharge it into the coil. Make sure your TV, tapes,
credit cards, are at the far end of your house, or out in your car..

Then blast away.. It may magnetize the shadow mask in his TV (fill it
with rainbow colors), erase his credit & ATM cards and his tapes??
With 3-4 of these Caps in parallel, we are probably talking around
a million watt pulse (for approx 1 millisec).. might be good to fire

this off remote control..
--ghg

1173. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 16:55:55 UTC
From: rkarlqu@scd.hp.com
Message-ID: <2f9u6r$o2g@hpscit.sc.hp.com>
Source record: 118989

In article <1993Dec22.000911.9923@ultb.isc.rit.edu>,
J.D. Cronin <jdc3538@ultb.isc.rit.edu> wrote:
>
>
>Have any of you folks tried the Mini-Circuits MAR-6 as a 2-meter (or
>other ham band) preamp? It has 50 ohm input/outputs, and looks like
>very few parts are needed. Are they any good? Is there anything
>special to watch out for?
>
>
>73...Jim
>N2VNO

This is a poor choice because the noise figure is rather
high and the 3rd order IMD intercept (which is
unspecified) is unlikely to be very good either. You
would do far better with a garden variety VHF dual gate MOSFET,
although it requires more skill to design the amplifier.

Rick Karlquist N6RK
rkarlqu@scd.hp.com

1174. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 17:17:21 UTC
From: jerry@hnrc.tufts.edu
Message-ID: <1993Dec22.121721.1693@hnrc.tufts.edu>
Source record: 118990
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIBMDI.MsI@eskimo.com>, quixote@eskimo.com (Looking for Sancho) writes:

> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day.

This is tough. I ended up moving once because of a noisy neighbor.
As others have suggested, speak with him. If he'll work with you, there are
lots of things to try:

moving your bed or his tv
getting him some carpeting or other things to absorb some of the sound (*)
if it is loud because he is listening at the other end of the room, get him
some speakers to move the sound there (*)
put up a sound absorbing wall in one of your apartments (*)

(*) offer to cover or share the costs. this is for your benefit, after all.

I would agrue against the disruptor as being ineffective. He'll just try to
get the tv fixed, will probably succeed, and he'll be mighty upset if
he ever figures out what was going on. *Don't* do this if he hasn't already
proven unreasonable. It'll be easy to work with him if you keep it on a
friendly basis. Difficult if you become enemies.

1175. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 18:35:18 UTC
From: zateslo@geomag.gly.fsu.edu
Message-ID: <2fa416$obk@mailer.fsu.edu>
Source record: 118992

In article <1993Dec17.201816.14925@news.unomaha.edu> ncc2001@cwis.unomaha.edu (Michael Fortner) writes:
>I do not think it is worthless to try to convert this piece of equipment.
>Many newer hams (myself included) can not afford the outragous prices of
>new and "newer" used equipment. However, we can afford and often enjoy
>modifying what we can afford. It is much better to take a piece of working
>electronics and keep it useful than have it take up space in a landfill.

I think the point was that this _particular_ modification (making a DX-60 do SSB) was just plain impracticable. The "SSB adaptors" made in the late 50s and early 60s cost quite a bit more than a basic transmitter like the DX-60. They were also mostly phasing-type units, which made them very tricky to set up. The DX-60 doesn't have a built-in VFO, and the one most often used with it isn't really stable enough for a good SSB signal. If you were to try to modify a DX-60 itelf for SSB, you'd have little left but the final stage, and you'd have pretty much destroyed a nice little CW transmitter.

There are lots of old SSB transmitters and transceivers on the used market, some at very reasonable prices. It's a better investment to buy an old TR-3 or Swan and fix or modify it than to make a DX-60 into something entirely different than it is.

That said, I sure hope nobody is throwing DX-60s (or any other vintage ham gear) into landfills!

Ted Zateslo, W1XO
zateslo@geomag.gly.fsu.edu

1176. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 18:38:37 UTC
From: glenne@sad.hp.com
Message-ID: <CIG94E.D2K@srgenprp.sr.hp.com>
Source record: 118991

J.D. Cronin (jdc3538@ultb.isc.rit.edu) wrote:

: Have any of you folks tried the Mini-Circuits MAR-6 as a 2-meter (or
: other ham band) preamp? It has 50 ohm input/outputs, and looks like
: very few parts are needed. Are they any good? Is there anything
: special to watch out for?

I believe that the MAR-6 is actually an Avantek part resold by
Mini-Circuits. I think that the Avantek specs for the MSA-06 apply or
are very close.

In any case, Mini-Circuits *does* specify distortion performance of
the MAR-6. They indicate that TOI (3rd order intercept) as +15 dBm at
16 mA bias. The parts really are fairly decent WRT TOI but perhaps not
as good as one might expect for SHI performance(which I believe is
unspecified).

It is a broadband part and as such some selectivity is in order if it
is to be used in front of a receiver as an additional gain stage. I
find the noise figure (specified to be under 3 dB) to be more than
adequate for amateur terrestrial use. Since antenna temperature is at
least 290 degrees K and considering the not insignificant QRN present in
most amateur environments, I believe that the difference in C/N on
received amateur signals to be completely insignificant when compared
with the lowest noise preamps. GaAs FET preamps *might* have better
distortion performance though. I doubt that dual gate FETs would be
better.

One does need to be careful not to put unnecessary gain ahead of a
receiver and to filter appropriately though. Otherwise strong signal
performance may be so comprimised as to negate any advantage that might
otherwise have been obtained in sensitivity increase. The amplifiers
need very little or no matching through the VHF region but filtering
may be another matter and could increase the part count.

I've used MAR-3,4,6,7, and 8 parts for a variety of purposes including
hamband and TV preamps. With care they can be quite useful.

Glenn Elmore n6gn

ax.25 n6gn@wx3k.#nocal.ca.usa.na
amateur IP: glenn@SantaRosa.ampr.org
Internet: glenne@sr.hp.com

1177. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 20:59:41 UTC
From: dmiller@crl.com
Message-ID: <2facft$g7i@crl.crl.com>
Source record: 118993

Glenn Elmore (glenne@sad.hp.com) wrote:

: I believe that the MAR-6 is actually an Avantek part resold by
: Mini-Circuits. I think that the Avantek specs for the MSA-06 apply or
: are very close.

This part is indeed manufactured by Avantek: Didn't your employer, HP,
buy Avantek a while ago?

: It is a broadband part and as such some selectivity is in order if it
: is to be used in front of a receiver as an additional gain stage.

This is the point I was trying to make in my reply to this thread. The
low input impedance of these mmic amps generally require special care in
designing the input match if any selectivity is to be had.

: I've used MAR-3,4,6,7, and 8 parts for a variety of purposes including
: hamband and TV preamps. With care they can be quite useful.

Indeed, with care. If I remember correctly, the MAR-8 is unique among
the series in that it is not inherently stable. Care must be taken that
terminations both in the band of operation and outside it will not make
the device "take off".

Don Miller dmiller@crl.com

1178. funny reception on my amp (?) ....curious.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 22:06:56 UTC
From: st92ba44@dunx1.ocs.drexel.edu
Message-ID: <CIGIrK.9s1@Dunx1.OCS.Drexel.Edu>
Source record: 118994

the other night i put together a small amp to drive a small pm
speaker that i wanted to use on my sw xtal radio (instead of headphones).
anyway, i put the amp on the radio output and it worked okay; it drove the
speaker reasonably well on the stronger signals. The wierd thing happened
when i was taking it apart to make it more permanent; the antenna lead from
outside accidentally hit the ground on my amp (while the power was on) and
it picked up a station! (the amp was not hooked to the radio). I was
wondering how, just the amp, could get any signal at all....its just a
bunch of capcitors and a speaker. I realize its for amplification of a signal
and the ant just provided one (i couldn't change channels, just the volume...
...i suppose because the equiv capac. was constant) but it had no crystal,
no coil, nothing. any ideas? (just curious).

____
antonio gatta
st92ba44@dunx1.ocs.drexel.edu

1179. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-22 23:47:11 UTC
From: jdc3538@ultb.isc.rit.edu
Message-ID: <1993Dec22.234711.17005@ultb.isc.rit.edu>
Source record: 118996

In article <2f8h82$ipb@crl.crl.com> dmiller@crl.com (Donald J. Miller) writes:
>
>Yep. Amps like these that are already matched for 50 ohms are actually
>somewhat undesirable for pre-amp use because unless you transform up to a
>higher impedance in your input circuitry before you transform back down,
>the pre-amp will be very broadband. Strong signals in the FM, AM, HF,
>you name it band could create real havoc for you. The only real
>selectivity you will have to protect you from intermod will be the
>antenna itself.
>
>Your situation will determine if you can use one of these. If you are
>not in an urban area -- maybe no problem. I would lean towards a FET
>device with a higher Q input matching network.
>
>73's Don Miller KM4AS dmiller@crl.com
>
Thanks for all the replies. For 2-meter use, would a bandpass filter
on the input suffice? I was thinking of picking a generic one from the
ARRL Handbook, and adjusting the values for 146 mhz.

73...Jim
N2VNO
lowpass filter

1180. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 00:43:34 UTC
From: jay@caeser.geog.pdx.edu
Message-ID: <2fapjm$8aa@psu_075.chem.pdx.edu>
Source record: 119001
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

A simple DC circuit can cause interferance, like this:

```
---------------Battery-----------
| |
| |
+ -
\ /
\ /
```

Metal-file piece of wire

just run the wire up and down the file and ALL radio/TV whithin a short distance will be disrupted..

This is all theoretical of course. It is illegal to disrupt any FCC licensed programing. TV is such a broadcast.

p.s. hair dryers and popcorn (hot air) popers also are very electricly noisey

--


```
==========================================================================
* Jay D. Allen - METNET at Portland State University *
* Department of Geography AND The Center For Science Education *
* jay@caeser.geog.pdx.edu *
==========================================================================
```

1181. Re: Mini-Circuits MAR-6 amp

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 01:06:50 UTC
From: myers@sunspot.West.Sun.COM
Message-ID: <2faqvaINN4jg@abyss.West.Sun.COM>
Source record: 118997

In article <1993Dec22.234711.17005@ultb.isc.rit.edu> jdc3538@ultb.isc.rit.edu (J.D. Cronin) writes:
>In article <2f8h82$ipb@crl.crl.com> dmiller@crl.com (Donald J. Miller) writes:
>>
>>Yep. Amps like these that are already matched for 50 ohms are actually
>>somewhat undesirable for pre-amp use because unless you transform up to a
>>higher impedance in your input circuitry before you transform back down,
>>the pre-amp will be very broadband. Strong signals in the FM, AM, HF,
>>you name it band could create real havoc for you. The only real
>>selectivity you will have to protect you from intermod will be the
>>antenna itself.
>>
>>Your situation will determine if you can use one of these. If you are
>>not in an urban area -- maybe no problem. I would lean towards a FET
>>device with a higher Q input matching network.
>>
>>73's Don Miller KM4AS dmiller@crl.com
>>
>Thanks for all the replies. For 2-meter use, would a bandpass filter
>on the input suffice? I was thinking of picking a generic one from the
>ARRL Handbook, and adjusting the values for 146 mhz.

Take a step back....

An ideal pre-amplifier will provide a stable gain, contribute no noise,
and handle infinitely large signals. You can't buy such an amplifier,
not even from HP/Avantek.

In the real world, you'll pick an amplifier that gives you a good combination
of gain, noise and strong-signal handling capabilities.

A GaAsFET can be quite nearly the optimum combination, but a grounded gate
JFET (like the J310) at 2m is 98% of what a GaAsFET is if you use the right
circuit.

What *I* would suggest is either the Hamtronics GaAsFET pre-amp (<$30 for a
kit, very nice) or the helical resonator pre-amplifier (around $50, I recall).
The GaAsFET makes sense if you already have a good receiver that is simply
not hot enough (i.e. Motorola Micor, GE Mastr Executive II or Custom MVP, etc.).
The helical pre-amp makes sense if you have a common amateur grade radio,
like an HT, etc. In either case, you need to arrange to insert the amplifier
between the receiver and T/R switch or provide an external T/R switch.

Try glancing at the ARRL "Handbook" for further info and pointers.

Dana
--
* Dana H. Myers KK6JQ, DoD 466 | Views expressed here are *
* (310) 348-6043 | mine and do not necessarily *
* Dana.Myers@West.Sun.Com | reflect those of my employer *
* This Extra supports the abolition of the 13 and 20 WPM tests *

1182. Re: funny reception on my amp (?) ....curious.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 02:18:50 UTC
From: randy@cyphyn.radnet.com
Message-ID: <1993Dec23.021850.10940@cyphyn.radnet.com>
Source record: 118998

antonio gatta (st92ba44@dunx1.ocs.drexel.edu) wrote:
: the other night i put together a small amp to drive a small pm
: speaker that i wanted to use on my sw xtal radio (instead of headphones).

: it picked up a station! (the amp was not hooked to the radio). I was

: no coil, nothing. any ideas? (just curious).
:
The amplifier was acting as if it was a diode-radio...or cats-whisker radio
which will pick up ANY station that is strong enough to override the
others....if you had listened close, you would have heard several stations
in the background.

When the antenna wire touched, it must have hit the audio input, and the
amplifier's input acting like a diode, rectifys (detects) the signal.
The rest of the amplifier, amplifys it.

You probably could repeat that and so hear those other stations .

By the way...how you discovered that, is how Alexander Bell got his
telephone to work. (zzzt! oops!)

--
Randy KA1UNW If you get a shock while
servicing your equipment, "Works for me!"
randy@192.153.4.200 DON'T JUMP! -Peter Keyes
You might break an expensive tube!

1183. 6 Meter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 02:51:44 UTC
From: bigboss@xmission.xmission.com
Message-ID: <2fb140$e8k@xmission.xmission.com>
Source record: 118999

Hello everyone, I am thinking of building a 6M SSB Transciver. I would like to know if this is a worthwhile project. I would mainly like to do it for the experience of doing it. I would like info of Schematics if possible, I could probably design one if pointed to the correct books, but would like to not do so if there is something out there that works well. I am a no-code Tech and would like to see if I can get some DX with my privs. I haven't had time to learn code yet so just want something to play with but would like a good radio to use in the future. If you have any info on 6M I would appreacte it. Band Condidions would be usefull as well. Thanks in advance.

Travis - KB7SEI
bigboss@xmission.com

1184. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 03:20:30 UTC
From: dwjurkat@rodan.syr.edu
Message-ID: <1993Dec22.222030.20982@newstand.syr.edu>
Source record: 119000
Cross-posted to: rec.video,sci.electronics,rec.radio.amateur.homebrew

In article <1993Dec20.044940.3260@cmkrnl.com> jeh@cmkrnl.com writes:
>In article <CIBMDI.MsI@eskimo.com>, quixote@eskimo.com (Looking for Sancho)
> writes:
>> The intended use of this device is to be put with a timer
>> against the wall where my new neighbor has his television set.
>> He comes home around midnight and keeps his television
>> loud until 3 am almost every day. I wonder about the legality
>> of my idea, therefore I would like something with regulated
>> signal strength since I would not like to affect other neighbors.
>
>Deliberately causing interference is definitely illegal under FCC regs, and
>may also constitute harrassment, etc., under local laws.
>
>Have you tried talking to your neighbor? And/or to your apartment manager?
>The clown doesn't necessarily have to be convinced to turn it off; simply
>moving the set to a non-adjoining wall will make a vast improvement. A request
>phrased as "I can't sleep at night any more" might work better than just "it's
>too loud".
>
>There ARE things you could do, especially if the set is really shoved up
>against a common wall with your apt., but if you know that little about
>electronics your chances of building anything and getting it working are slim
>to none. There are RF generators available with the appropriate frequency
>range, but their output is low (they're intended for direct connection to a
>device being tested) and they won't have much effect if the guy is watching
>cable or playing a tape on the VCR.
>
>If the set is remote-controlled, you could always get a universal remote and
>try to turn the set off from outside his window. :-)
>
> --- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
>Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

Information Unlimited 800-221-1705 TV & FM Joker/Jammer #EJK1KM Easy to
Assemble Electronic Module Kit $19.50 + $5.25 P&H

C&S Sales 800-292-7711 TV/FM Oscillator (Ch 2 -13) $6.50 + $3.00 P&H
($10.00 min order)

Ocean State Electronics 800-866-6626 TV/FM Oscillator (Ch 2-13) #K-29
$5.30 + $4.50 P&H ($10.00 min order)

Gratuitous Advice: You risk a fine from a government agency, you risk
getting kicked out of your apartment, if you are a student you risk

expulsion. Oh yeah, your neighbor might kick the shit out of you. 'Nuff said.

Instead of a timer you might want to hook up a noise level sensor. When the volume increases above a certain level his TV gets jinked. He'll more likely think he has a bad TV. If you are too consistent (timer) then you'll be tracked down sooner. Also hide the silly thing when you are not home. (landlords have been known to snoop).

Hope you can resolve this without going to extremes. Good luck.

)

1185. 80 M DSB transceiver project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 10:44:15 UTC
From: spearce@chmeds.ac.nz
Message-ID: <1993Dec23.224415.391@chmeds.ac.nz>
Source record: 119002

Electronic Australia recently ran an article on a DSB 80 transceiver
with a synthesiser in built.

Does anyone know of a source for the kit for this project
and maybe cost?

Thanks
Stephen

1186. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 14:54:14 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Dec23.145414.20482@news.unomaha.edu>
Source record: 119003

zateslo@geomag.gly.fsu.edu writes:
> If you were to try to modify a DX-60 itelf for SSB, you'd have
> little left but the final stage, and you'd have pretty much
> destroyed a nice little CW transmitter.

That would appear to be the general feeling of the replies I've gotten. Oh, well, I can still use it on CW as soon as I can afford a rcvr! :)

> That said, I sure hope nobody is throwing DX-60s (or any other
> vintage ham gear) into landfills!

Well, if anybody out there is going to throw away any working rig because it is old and out of date, just drop me a line here. My father works for a truck company and can get things shipped to and from him for free. Drop me a line, I'm getting divorced and any ham equipment will be appreciated.

73 de N0YBC Michael

--
Michael Fortner N0YBC	"What do you want for Christmas,
Internet: ncc2001@cwis.unomaha.edu	Crow?"
Packet: N0YBC@WB0BLR.#SWIA.IA.USA.NA	"I want to decide who lives and who
	dies!" - MST3K

1187. Re: 6 Meter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 15:23:04 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec23.152304.22450@ke4zv.atl.ga.us>
Source record: 119004

In article <2fb140$e8k@xmission.xmission.com> bigboss@xmission.xmission.com (Travis Tabbal) writes:
>
>Hello everyone, I am thinking of building a 6M SSB Transciver. I would
>like to know if this is a worthwhile project. I would mainly like to do it
>for the experience of doing it. I would like info of Schematics if
>possible, I could probably design one if pointed to the correct books, but
>would like to not do so if there is something out there that works well. I
>am a no-code Tech and would like to see if I can get some DX with my
>privs. I haven't had time to learn code yet so just want something to play
>with but would like a good radio to use in the future. If you have any
>info on 6M I would appreacte it. Band Condidions would be usefull as well.
>Thanks in advance.

Travis, building an SSB transceiver of any kind is a complex and ambitious project. That's why most amateurs restrict themselves to transverters, amplifiers, or FM/CW equipment. 6 meters is also an in between band where normal HF techniques don't quite work, yet VHF/UHF techniques are too bulky. The *easiest* approach is to modify an old SSB CB set to work on 6 meters. This gives you a good SSB subsystem as a foundation.

If you want to build from scratch, there's a complete SSB transceiver design in the 1977 Handbook. It relies on the MC1496G as a balanced modulator. There are better ways today using hybrid ring mixers, but the current Handbook doesn't offer anything except QRP CW rigs. You might try the RSGB books instead. Or check out Rick Campbell's design published in either QST or QEX earlier this year.

Generally a filter method design is easier to get working correctly than a phasing or Weaver method design. You'll probably want to take as modular an approach as possible to aid in troubleshooting, and to make it easier to add upgrades.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

1188. Re: Mini-Circuits MAR-6 amp/Filtering the input.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 15:38:37 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec23.153837.5790@yuma.ACNS.ColoState.EDU>
Source record: 119008

In article <1993Dec22.234711.17005@ultb.isc.rit.edu> jdc3538@ultb.isc.rit.edu (J.D. Cronin) writes:
>Thanks for all the replies. For 2-meter use, would a bandpass filter
>on the input suffice? I was thinking of picking a generic one from the
>ARRL Handbook, and adjusting the values for 146 mhz.
>73...Jim
>N2VNO

Look at the Toko Helical Resonator filters in the Digi-Key catalog. Toko also has some that won't require retuning, but their catalog is at my office and I'm on vacation.
Galen, KF0YJ, DN70

1189. Re: 6 Meter

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 16:43:42 UTC
From: mack@ncifcrf.gov
Message-ID: <CIHyGu.M6v@ncifcrf.gov>
Source record: 119006

In article <2fb140$e8k@xmission.xmission.com> bigboss@xmission.xmission.com (Travis Tabbal) writes:
>
>Hello everyone, I am thinking of building a 6M SSB Transciver. I would
>like to know if this is a worthwhile project.
>KB7SEI
This is a large project so you might want to make it modular enough that that you can use the exciter and receiever parts for other bands. 6m is fairly quiet and will be getting more so till the sunspots improve. Things still happin contests and for metoer scatter but by and large you won't be using your rig on 6m as much as on other bands. I don't know if you are looking for something to build or to get on 6m. Since hams don't seem to have a lot of time to design and debug equipment, it's nice if all the work that one person does (like the thing you are trying to do) can be then reproduced by others (ie publish it in QST, QEX, Comm Quart..). Since transceivers are relatively cheap (TS140 etc) not many hams will want to reproduce your rig, even when you publish it. Most people put a transverter in front of their transceiver and go from there. There aren't many trasnverter designs for 100W out on 6m (this amount of power is needed to drive big linears). Would such a thing interest you?

Joe NA3T
mack@ncifcrf.gov

1190. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 17:10:49 UTC
From: jim@n5ial.mythical.com
Message-ID: <1993Dec23.171049.5914@n5ial.mythical.com>
Source record: 119012
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <1993Dec22.121721.1693@hnrc.tufts.edu> jerry@hnrc.tufts.edu (Jerry Dallal) writes:

>I would agrue against the disruptor as being ineffective. He'll just try to >get the tv fixed, will probably succeed, and he'll be mighty upset if >he ever figures out what was going on. *Don't* do this if he hasn't already >proven unreasonable. It'll be easy to work with him if you keep it on a >friendly basis. Difficult if you become enemies.

I'll go along with that..... If I were having problems with a neighbor, for example, if my HF rig were getting into their TV or something, I'd be more than happy to help correct the problem as long as they were civilized about it. If, on the other hand, they came over demanding that I simply stop transmitting, period, or if they sabotaged my antenna (that assumes they could find it first), I'd just be more likely to keep right on operating (and if needed, help any other neighbors with filters, etc.).

Or, to relate this more to the current (non-amateur-radio) thread, if a neighbor thought my stereo was turned up too loud, if they simply asked me to turn it down, I'd gladly do so. If they went straight to the apartment management (or worse, the police), I'd simply ask the management to let the neighbor know that if they'll just politely ask (IMHO, that implies asking me directly), I'd be more than happy to turn it down, but that so far, nobody had even asked.

I don't think I'm the exception to the rule here.... If you ask nicely, you'd be surprised at how good the results will usually be. If you start off by being rude/nasty about it, you'll also be surprised at the results, except they'll probably be just the opposite of what you were hoping for.

That reminds me of people who just bang on the walls...my reaction is to wonder why they keep banging on the walls, and to turn the stereo up so I can hear it clearly over the noise. :-)

Fortunately, in my case, none of this has been a problem for years.

Later,
--jim

--
#include <std_disclaimer.h> 73 DE N5IAL (/4)
-------------------------< Running Linux 0.99 PL10 >--------------------------
Internet: jim@n5ial.mythical.com | j.graham@ieee.org ICBM: 30.23N 86.32W
Amateur Radio: (packet station temporarily offline) AMTOR SELCAL: NIAL

E-mail me for information about KAMterm (host mode for Kantronics TNCs).

1191. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 17:25:12 UTC
From: dwills@server.uwindsor.ca
Message-ID: <CII0E1.Dyo@uwindsor.ca>
Source record: 119005
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

Anything with a flyback converter in it will spew out lotsa wideband noise...
--
Michael Dunn
dwills@uwindsor.ca

1192. Charging Deep-Cycle Batteries from Automobile

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 18:24:27 UTC
From: eesnyder@beagle.Colorado.EDU
Message-ID: <eesnyder.756671067@beagle>
Source record: 119007

I have been thinking about battery setups for remote HF/VHF
station. From what I have read, the deep cycle marine/RV
batteries are the way to get a good strong 12 volt DC power
supply.

However, I am wondering what the best way to charge
such cells. Can I simply run a set of jumper cables from
my car battery to the cell while I am driving? Do I need any
sort of regulation or will my car's electrical system take
care of this?

Any suggestions or references would be greatly appreciated.
The reading I have done consists mainly of an article in QST
on solar-powered stations... so, of course, it didn't talk
a lot about other ways to charge the batteries.

Thanks,

Eric E. Snyder
Department of MCD Biology ...making feet for childrens' shoes.
University of Colorado, Boulder
Boulder, Colorado 80309-0347

1193. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-23 20:27:40 UTC
From: Curtis_Eickerman-P11578@email.mot.com
Message-ID: <1993Dec23.202740.29947@schbbs.mot.com>
Source record: 119009

In article <2fa416$obk@mailer.fsu.edu>, zateslo@geomag.gly.fsu.edu (Ted Zateslo) says:
>
>In article <1993Dec17.201816.14925@news.unomaha.edu> ncc2001@cwis.unomaha.edu (Michael Fortner) writes:
>>I do not think it is worthless to try to convert this piece of equipment.
>>Many newer hams (myself included) can not afford the outragous prices of
>>new and "newer" used equipment. However, we can afford and often enjoy
>>modifying what we can afford. It is much better to take a piece of working
>>electronics and keep it useful than have it take up space in a landfill.
>
>I think the point was that this _particular_ modification (making
>a DX-60 do SSB) was just plain impracticable. The "SSB adaptors"
>made in the late 50s and early 60s cost quite a bit more than
>a basic transmitter like the DX-60. They were also mostly
>phasing-type units, which made them very tricky to set up.
>The DX-60 doesn't have a built-in VFO, and the one most often
>used with it isn't really stable enough for a good SSB signal.
>If you were to try to modify a DX-60 itelf for SSB, you'd have
>little left but the final stage, and you'd have pretty much
>destroyed a nice little CW transmitter.
>
>There are lots of old SSB transmitters and transceivers on the used
>market, some at very reasonable prices. It's a better investment to
>buy an old TR-3 or Swan and fix or modify it than to make a DX-60
>into something entirely different than it is.
>
>That said, I sure hope nobody is throwing DX-60s (or any other
>vintage ham gear) into landfills!
>
>Ted Zateslo, W1XO
>zateslo@geomag.gly.fsu.edu
>
I already followed up on this under rec.radio.amateur.equipment, but here are a couple of more thoughts relating to the above. First, if you can even find one, the Heath SB-10 sideband adapter should cost you around $25 tops. What was said about the VFO (by the way do you have the HG-10?) may be true, but I believe it may actually be marginally stable enough. I had one and am kind of picky about that sort of thing and still do not remember having much if any drift problem. However, on 10 meters it might be questionable. If you run across an SB-10 with the Apache transmitter you should be able to get that for $75 tops, and its all designed to work together. It would be kind of tough to figure out without the manuals though.

It will work on 10 M, stable VFO, and great audio, but total weight is around 120 pounds. I know. I owned and used one for many years and a lot of that time was spent on 10 meters. On the other hand for abound $150 you can buy an SB100, 101 or 102, and for around $200 some of the earlier solid state rigs are available. You pays your money and takes your choice.

Merry Christmas.

Curtis, WB6PUS

1194. Re: Mini-Circuits MAR-6 amp/Filtering the input.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-24 01:55:11 UTC
From: btoback@indirect.com
Message-ID: <CIIo00.3p3@news.direct.net>
Source record: 119010

In article <Dec23.153837.5790@yuma.ACNS.ColoState.EDU> galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>In article <1993Dec22.234711.17005@ultb.isc.rit.edu> jdc3538@ultb.isc.rit.edu (J.D. Cronin) writes:
>>Thanks for all the replies. For 2-meter use, would a bandpass filter
>>on the input suffice? I was thinking of picking a generic one from the
>>ARRL Handbook, and adjusting the values for 146 mhz.
>>73...Jim
>>N2VNO
>
>Look at the Toko Helical Resonator filters in the Digi-Key catalog. Toko
>also has some that won't require retuning, but their catalog is at my office
>and I'm on vacation.
>Galen, KF0YJ, DN70
>
Good idea, Galen! The Toko TK3506 has a center frequency of 145mHz with a bandwidth of 2.8mHz. It's available from Digi-Key for $23.53 for one, or $117.67 for ten.

By the way, their catalog is free and is well worth having. The phone number is 1-800-344-4539 (800 DigiKey).

-- Bruce Toback

1195. Re: Mini-Circuits MAR-6 amp/Filtering the input.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-24 03:58:06 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec24.035806.93073@yuma.ACNS.ColoState.EDU>
Source record: 119011

In article <CIIo00.3p3@news.direct.net> btoback@indirect.com (Bruce Toback) writes:
>In article <Dec23.153837.5790@yuma.ACNS.ColoState.EDU> galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>>In article <1993Dec22.234711.17005@ultb.isc.rit.edu> jdc3538@ultb.isc.rit.edu (J.D. Cronin) writes:
>>>Thanks for all the replies. For 2-meter use, would a bandpass filter
>>>on the input suffice? I was thinking of picking a generic one from the
>>Look at the Toko Helical Resonator filters in the Digi-Key catalog. Toko
>>also has some that won't require retuning, but their catalog is at my office
>>and I'm on vacation.
>>Galen, KF0YJ, DN70
>Good idea, Galen! The Toko TK3506 has a center frequency of 145mHz with
>a bandwidth of 2.8mHz. It's available from Digi-Key for $23.53 for one,
>or $117.67 for ten.
>By the way, their catalog is free and is well worth having. The phone
>number is 1-800-344-4539 (800 DigiKey).
>-- Bruce Toback

There's another Toko that works at 145MHz but only has 3dB of loss. I think
the TK3506 loses around 8dB. I also noticed a few that worked up around
430, 440 MHz. Hmmmmmmm....
Galen, KF0YJ

1196. Re: Two meter monitor from NEW Radio Shack WX cube?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-24 10:37:22 UTC
From: wvanhorn@magnus.acs.ohio-state.edu
Message-ID: <2fegp2$bbu@charm.magnus.acs.ohio-state.edu>
Source record: 119013

>Several years ago they used to have a weather cube that
>you could modify to serve as a dedicated monitor for one
>or two frequencies on the two meter band (I think the
>mod was in QST, anyone know the year and issue?) I'm pretty
>sure it was just a trivial modification too (add a capacitor
>and tune it??)

The article was in HAM RADIO, May, 1973, p. 76. I got this
info from the index by Didah Publishing. I don't have a copy
of the mag.

73, Van - W8UOF

```
-------------------------------------------------------------
! It ain't wot you don't know wot gets you into trouble. !
! It's wot you know wot ain't true. - "Mr. Dooley" !
!_____________________________________________________________!
```
wvanhorn@magnus.acs.ohio-state.edu

1197. Re: Heathkit DX-60B Mod?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-24 16:47:43 UTC
From: ncc2001@cwis.unomaha.edu
Message-ID: <1993Dec24.164743.8964@news.unomaha.edu>
Source record: 119014

Just to let you know, I do have a HG-10B.

later

73 de N0YBC Michael
--
Michael Fortner N0YBC	"What do you want for Christmas,
ncc2001@cwis.unomaha.edu	Crow?"
N0YBC @ WB0BLR.#SWIA.IA.USA.NA	"I want to decide who lives and who
	dies!" - MST3K

1198. Re: Charging Deep-Cycle Batteries from Automobile

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-25 14:46:35 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec25.144635.1437@ke4zv.atl.ga.us>
Source record: 119015

In article <eesnyder.756671067@beagle> eesnyder@beagle.Colorado.EDU (Eric E. Snyder) writes:
>I have been thinking about battery setups for remote HF/VHF
>station. From what I have read, the deep cycle marine/RV
>batteries are the way to get a good strong 12 volt DC power
>supply.

Yes they are. They are designed for the deep discharges that rapidly kill auto cranking batteries, and they're relatively cheap. However, they are still messy wet cells that can outgas or leak. The *really* good batteries are the traction gel cells, but they are still seriously expensive. The 26 used in the GM Impact cost $1250 *each*. But they'll last 3 years and put out a combined 100 kW peak.

>However, I am wondering what the best way to charge
>such cells. Can I simply run a set of jumper cables from
>my car battery to the cell while I am driving? Do I need any
>sort of regulation or will my car's electrical system take
>care of this?

Well it might take *long* jumper cables if you're driving. :-) You can charge your deep cycle station batteries off an idling car, but that's rather inefficient, and the charging is not well controlled. Most of these batteries sulphate and boil off hydrogen if charged rapidly. It's better to slow charge them for long life. Their chemistry is enough different from cranking batteries that using the same methods isn't an ideal way of charging them.

>Any suggestions or references would be greatly appreciated.
>The reading I have done consists mainly of an article in QST
>on solar-powered stations... so, of course, it didn't talk
>a lot about other ways to charge the batteries.

Write or call the major battery manufacturers. They have good application notes and catalogs that they will be happy to send you on how to treat their batteries for best results. In general, most will tell you that you should use a constant voltage charger with current limiting, and that there's really no substitute for wet hydrometers for monitoring cell state of charge.

Gary
--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary

534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

1199. Crystal Radios

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-25 18:01:18 UTC
From: kafka@iat.holonet.net
Message-ID: <CILrE9.17o@iat.holonet.net>
Source record: 119016

I am looking for any information on crystal radios. I will buy photocopies or originals of books/periodicals. If you know of any other sources for info let me know.

Thanks

1200. Re: Crystal Radios

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-25 18:54:50 UTC
From: ab510@FreeNet.Carleton.CA
Message-ID: <CILtvE.LIK@freenet.carleton.ca>
Source record: 119017

In a previous article, kafka@iat.holonet.net (Marc McNulty) says:

>
>I am looking for any information on crystal radios. I will buy
>photocopies or originals of books/periodicals. If you know of any other
>sources for info let me know.
>
>Thanks
>
I have an interesting article on xtal sets from a popular book some years
ago. it consists of 2 xtal sets "in series"- the second one generating
voltage to fire up a single transistor audio amp to drive a spkr for the
first set. If you are interested email your address and I will send you
a paper copy. Cheers and Merry Xmas- George VE3KIA Ottawa, Canada.

--
GEORGE ATTALLAH - VE3KIA -OTTAWA CANADA
"THE LAST SURVIVOR OF THE GROUP OF ONE"
"THE ONLY ONE IN CAPTIVITY"

1201. Needed: Simple TX Amp for FM Mic

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-26 07:16:52 UTC
From: asirene@ntuvax.ntu.ac.sg
Message-ID: <1993Dec26.151652.1@ntuvax.ntu.ac.sg>
Source record: 118918

There are many simple FM mic type transmitter circuits out ther utilizing Hartley and Colpitts oscilators but most of these are quite weak in terms of power out put and yields a typical range of about 100 to 200 meters in built up areas. Does anyone out there know /have a simple to build amplifier which can say increase this to a few kilometers but retaining the simplicity of the oscillator section? A simple schematic would be nic without needing too many hard to get parts., maybe using a 2N3866 and air wound coils. Any one out there with design expertise? Help!

73s de 9VG Daniel

1202. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-26 09:47:09 UTC
From: chu@bondi.jpl.nasa.gov
Message-ID: <2fjmit$8pi@elroy.jpl.nasa.gov>
Source record: 118919
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

quixote@eskimo.com (Looking for Sancho) writes:

> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.

I had this problem with a neighbor in an apartment that I used to live in. I considered talking to her about her TV, but realized that it would have done no good since her snoring would actually come through, over the noise of the TV. I eventually moved into my own house, on a corner lot, with a tree farm behind me, and only one neighbor to the far side from my bedroom and audio room. I could boom well into the night if I wanted to (and did).

I know this doesn't solve your problem, but I think the first step should be to talk to him. Failing that, talk to the apartment manager. Failing that, call the cops. If you go through with your TV jammer, it might just become him calling the cops on you.

eyc

1203. WANTED: Help with speaker sys.

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-27 01:21:25 UTC
From: x92pedler@gw.wmich.edu
Message-ID: <1993Dec26.202125.13669@gw.wmich.edu>
Source record: 118920

I hope someone can help me out with what I think is a relatively simple problem.

I am trying to expand my current stereo speaker system by using the CD-line out jacks. I want to run those lines into some sort of box that would have multiple speaker jacks, so that I could attach and remove external speakers simply by pulling rca plugs. I have canibalized an old stereo and have some really nice speakers that I would like to use with my current rig.

The problem is this: When I run the CD line-out lines directly to the speakers, I get a VERY small signal coming through them (I have to press my ear up to the diaphragm to hear it) and the signal coming out of the speakers that are already attached to the stereo (the originals, not using the line-out signal) also become so quiet that I have to turn the volume all the way up just to hear them. It is as if the sound is just pulled out of the machine when I hook up the external speakers. However, when I connect another stereo (one with line-IN jacks) to mine, they both work fine, with plenty of volume.

I was wondering if I need some sort of amplifier in the separate box, and possibly a cross-over network to send the signals out to the various speakers. I would appreciate any suggestions!

Andy Pedler
Western Michigan University

1204. Spray-on shield stuff...

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-27 16:24:52 UTC
From: ka7oei@uugate.wa7slg.ampr.ORG
Message-ID: <40646@uugate.wa7slg.ampr.org>
Source record: 118922

I obtained some spray-on shielding from a local part-supply house.
It is GC electronics part no. 10-4807 and called "EMI-RFI Shield"

It works very well, but it can dissolve plastics... of course, it permeates
plastics that way, too...

<Clint>
clint@uugate.aim.utah.edu
ka7oei@uugate.wa7slg.ampr.org

1205. MAR-6 Preamp/Toko Helicals

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-27 16:47:20 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec27.164720.70504@yuma.ACNS.ColoState.EDU>
Source record: 118921
Cross-posted to: rec.radio.amateur.homebrew,rec.radio.amateur.equipment

I'm back at work, and the Toko Helical Filter I'm thinking of is the
271MT-1159A, one of the CBW types. Center freq of 146 MHz, 0.5 dB ripple,
-27 dB at 131 MHz and -22 dB at 161 MHz with only 3dB insertion loss.

Toko can be reached (catalog of coils and filters available) at 708-297-0070.
I have the big catalog and it's chock full of inductors and such, Helical
filters going up to 1250 MHz and down to 100 MHz.
Galen, KF0YJ, DN70

1206. Re: 80 M DSB transceiver project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-28 13:18:39 UTC
From: Anders.Fongen@d.saga.telemax.no
Message-ID: <Anders.Fongen.21.000D5005@d.saga.telemax.no>
Source record: 118923

In article <1993Dec23.224415.391@chmeds.ac.nz> spearce@chmeds.ac.nz writes:

> Electronic Australia recently ran an article on a DSB 80 transceiver
>with a synthesiser in built.

I Have seen CirkIt (UK) selling something like this. It comes as a collection of kits, and I don't have the most recent catalogue. Something around GBP150 for a complete kit, (a vague memory).

By the way, what does "DSB" means? Double sideband with attenuated carrier? In the ARRL handbook, DSB is equivalent of AM. "Double Sideband, attenuated carrier" bears no designation in the modulation chapter in the ARRL handbook. Would anyone consider the use of "DSB" as a considerate modulation in a crowded spectrum (this is no critics to you, Stephen)?

Send me a mail, Stephen, if you need CirkIt's address and more info.

Anders Fongen, Norway (LA6UIA)

1207. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-28 16:25:12 UTC
From: lapin@casbah.acns.nwu.edu
Message-ID: <2fpml8$obg@news.acns.nwu.edu>
Source record: 118924
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

quixote@eskimo.com (Looking for Sancho) writes:

> I would be interested in obtaining some device which would
> disrupt television reception around my apartment. If they
> are not so complicated, I imagine that with some patience,
> one could build one, but I do not even know the range of
> frequencies used by commercial television radio waves.
>
> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.
>
> Any information about where one can buy these devices or where
> one can find a simple circuit to make one, (I know very little about
> radio or electronics), will be greatly appreciated.

What an unusual request. I spend my time worrying about how to stop what you would like to start.

The suggestions about magnetic fields are pretty good - we have a terrible time with the computer monitors in the vicinity (100 yards) of our 4.7 Tesla MRI. The liquid helium to keep it running is a little pricey for use in an apartment!

When I was in college some guys at the end of the hall in my dorm ran their stereo full blast day and night. I thought I would be smart and disrupt them so I went over to the ham shack and borrowed a 6 meter AM xcvr. I hooked it up in my room with a wire antenna on the floor (I wasn't trying to transmit far!). The first time I keyed up, the noise stopped. Later I found out that I had blown out their very expensive speakers, and they were VERY LARGE and ... I don't think I'll try something like that again!

Greg KD9AZ

1208. 6m quad design,help

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-28 16:58:54 UTC
From: gwood@robins.af.mil
Message-ID: <2fpoke$2h5@wrdis02.robins.af.mil>
Source record: 118925

would like to fine a design for a 6m quad 5,6 element
if any one out there could help me you just dont't know
what it would mean to me .

KC4YBL
GREG WOOD

1209. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-28 17:15:53 UTC
From: ham@wam.umd.edu
Message-ID: <2fppk9$q6m@cville-srv.wam.umd.edu>
Source record: 118926
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

I have found the following to work really well at disrupting the TV:

15 meter CW
2 meters, any power!

The blender does a good job, and so does the microwave!

--
73, _________ _________ The
\ / Long Original
Scott Rosenfeld Amateur Radio NF3I Burtonsville, MD | Live $5.00
WAC-CW/SSB WAS DXCC - 119 QSLed on dipoles __________| Dipoles! Antenna!

1210. Re: - - television disruptor - -

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-28 18:37:23 UTC
From: keithl@klic.rain.com
Message-ID: <1993Dec28.183723.6911@klic.rain.com>
Source record: 118927
Cross-posted to: sci.electronics,rec.radio.amateur.homebrew,rec.video

In article <CIBMDI.MsI@eskimo.com> quixote@eskimo.com (Looking for Sancho) writes:
>
> The intended use of this device is to be put with a timer
> against the wall where my new neighbor has his television set.
> He comes home around midnight and keeps his television
> loud until 3 am almost every day. I wonder about the legality
> of my idea, therefore I would like something with regulated
> signal strength since I would not like to affect other neighbors.

Of course, you should consider talking to your neighbor and apartment manager, learning diplomacy, etc. If your apartment manager isn't interested in providing a quiet place for you to live, you should consider moving.

Making radio interference is illegal. Without a lot of equipment and knowledge, there is no way to tell that you are doing it correctly, anyway. Making his set unusable on any channel he was watching, while causing no noticable disruption of any channel on other sets, may not even be possible.

So, given the constraints, what can you do? I suppose you could degauss the fellow's TV set for him - a few hundred pounds of wire, made into a very big coil, and connected to line, would cause the picture on his screen to change colors and wave back and forth. It would take some experimentation and a hell of a lot of wire (perhaps 200 turns around a 5 foot form) to find something that generates a big AC magnetic field but doesn't blow your circuit breaker. It will also make a loud hum if it isn't VERY sturdy and the windings aren't firmly anchored.

Now, this will subject *you* to a big time varying magnetic field, and might give you some loathsome disease (if tabloid science is to be believed), but all the effort of making it will exhaust you and make it easier for you to sleep.

:-)

Keith

--
Keith Lofstrom keithl@klic.rain.com Voice (503)-520-1993
KLIC --- Keith Lofstrom Integrated Circuits --- "Your Ideas in Silicon"
Design Contracting in Bipolar and CMOS - Analog, Digital, and Power ICs

1211. MFJ 1814 controller & other decoders

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-29 14:37:55 UTC
From: asirene@ntuvax.ntu.ac.sg
Message-ID: <1993Dec29.223755.1@ntuvax.ntu.ac.sg>
Source record: 118928

Hi,
Can anyone recommend a good controller for receiving and decding SITOR,
PACTOR etc etc, like the Hoka's Code 3. Any cooments on the MFJ 1814 also
welcome.
Daniel

1212. NEED HELP testing 4PR400A tube

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-29 18:36:28 UTC
From: waldo@lucifer.stanford.edu
Message-ID: <2fsinc$cc@morrow.stanford.edu>
Source record: 118929

Hi:

I need some help testing a 4PR400A tube. Does anybody have an old linear amplifier out in their garage that I could use for 5 minutes to perform this task on ? I am located at Stanford University near Palo Alto. Many thanks in advance.

waldo winterburn WA6RCI

waldo@lucifer.stanford.edu

1213. Who Makes Wideband RF Modules??

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 02:50:32 UTC
From: galen@picea.CFNR.ColoState.EDU
Message-ID: <Dec31.025032.22598@yuma.ACNS.ColoState.EDU>
Source record: 118930
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

Maybe I should have said '... besides Motorola.' I have their books,
but who else makes RF amp modules working 10-500 MHz with a few watts
output, and what are their phone numbers for literature?
I got that buildin' bug agin',
Galen, KF0YJ

1214. close

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 11:02:46 UTC
From: asirene@ntuvax.ntu.ac.sg
Message-ID: <1993Dec31.190246.1@ntuvax.ntu.ac.sg>
Source record: 118931

Hi,
I am trying to design a data decoder, can anyone advise me on whether
to use NE567 or the XR2206? Which is better and how do I use the XR2206 FSk
chip? Docs? Specs? Tks.

73s de 9VG Daniel

1215. Re: Who Makes Wideband RF Modules??

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 13:19:12 UTC
From: kludge@grissom.larc.nasa.gov
Message-ID: <2g18sg$6ld@reznor.larc.nasa.gov>
Source record: 118932
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

In article <Dec31.025032.22598@yuma.ACNS.ColoState.EDU> galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>Maybe I should have said '... besides Motorola.' I have their books,
>but who else makes RF amp modules working 10-500 MHz with a few watts
>output, and what are their phone numbers for literature?

Philips makes some nice ones too, which may even be available as ECG replacement parts. They aren't as promiscuous with free samples as Motorola is, though.
--scott
--
"C'est un Nagra. C'est suisse, et tres, tres precis."

1216. Crystal filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 13:56:16 UTC
From: bapplega@isd.CSc.COM
Message-ID: <9312311356.AA03715@isd.csc.com>
Source record: 118933

I'm looking for a source of crystal filters for a superhet receiver I'm working on. Rather than matching crystals and building one myself, I'd rather just buy one off the shelf. What rigs use 9.0 MHz IFs now? I see that my 735 has a few near there, but not quite, and I really want to use a filter designed for a 9MHz IF.

Any advice where I can find them or at least what modern rigs use 9MHz IFs?

Thanks,
Bob

1217. Re: close

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 16:06:42 UTC
From: gary@vulcan.com
Message-ID: <VXJFFc1w165w@vulcan.com>
Source record: 118944

The XR-2206 is a function generator, it can be used to transmit FSK data, but not to decode it. I am looking at a spec sheet on the chip right now. If you want to decode, you need another chip. Are you wanting to decode data from HF or VHF ? If VHF, you could get by with a PLL.

On HF, you have impairments that do not generally show up in VHF, so you probably want something better than a PLL. A good reference for HF data modems (I should say a good starting point) is an article by Dr. Alan Chandler of AEA, Inc. in the Spring 1991 issue of Communications Quarterly.

Good Luck and 73's

Gary Tennyson
KO4CY
gary@vulcan.com
asirene@ntuvax.ntu.ac.sg writes:

> Hi,
> I am trying to design a data decoder, can anyone advise me on whether
> to use NE567 or the XR2206? Which is better and how do I use the XR2206 FSk
> chip? Docs? Specs? Tks.
>
> 73s de 9VG Daniel

Gary Tennyson
gary@vulcan.com

1218. Looking for information

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 16:31:32 UTC
From: jangus@skyld.tele.com
Message-ID: <757355492snx@skyld.tele.com>
Source record: 118937

Doesn't anyone read books any more?
Doesn't anyone go the the library and look for something themselves?
Doesn't anyone look in technical publications for information?

What is it about the internet that seems to breed the following attitude?

"I don't want to expend the effort to
look so can someone else do it for me?"

Along a similar thread, how is it that no one seems to think of the
manufacturers as a source of information?

Are you people really that cheap, lazy or stupid?

Not that the ARRL amateur radio handbook is the be all to end all,
but it is two inches thick for a reason. Likewise, QST is loaded
full of advertisements. (As several others complain about.)

Dialing 411 (In the US) gets you directory assistance. Dialing
1 (area code) 555-1212 gets you directory assistance for any other
area code. Dialing 1 800 555-1212 gets you the free number directory
assistance for those of you too cheap to call someone direct.

Now I know there are a lot of obscure technical aspects to amateur
radio, but geeze people. Get off of your tail ends and look around
a bit before you waste every one elses time.

And before the self appointed guardians of the net jump on me about
the remark of wasting my time, consider this, I don't think there are
any stupid questions. But there sure are a lot of unnecessary ones.

73 es GM from Jeff

Amateur: WA6FWI@WA6FWI.#SOCA.CA.USA.NA | "It is difficult to imagine our
Internet: jangus@skyld.tele.com | universe run by a single omni-
US Mail: PO Box 4425 Carson, CA 90749 | potent god. I see it more as a
Phone: 1 (310) 324-6080 | badly run corporation."

1219. How to use the XR2211?

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 16:42:53 UTC
From: asirene@ntuvax.ntu.ac.sg
Message-ID: <1994Jan1.004253.1@ntuvax.ntu.ac.sg>
Source record: 118935

Hi,
Can anyone help me with the XR2211 PLL chip from EXAR? I need specs,
data, pinouts, schematics etc. Need it for decoding RTTY/CW/AMTOR/SITOR/WWV
etc. How fast will it go? Tks in advance.

Daniel

1220. Re: Who Makes Wideband RF Modules??

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 17:47:10 UTC
From: gay@selkirk.sfu.ca
Message-ID: <gay.757360030@sfu.ca>
Source record: 118934
Cross-posted to: rec.radio.amateur.misc,rec.radio.amateur.homebrew

kludge@grissom.larc.nasa.gov (Scott Dorsey) writes:

>In article <Dec31.025032.22598@yuma.ACNS.ColoState.EDU> galen@picea.CFNR.ColoState.EDU (Galen Watts) writes:
>>Maybe I should have said '... besides Motorola.' I have their books,
>>but who else makes RF amp modules working 10-500 MHz with a few watts
>>output, and what are their phone numbers for literature?

>Philips makes some nice ones too, which may even be available as ECG
>replacement parts. They aren't as promiscuous with free samples as
>Motorola is, though.
>--scott
>--
>"C'est un Nagra. C'est suisse, et tres, tres precis."

Also Mini-Circuits. (212) 769-0200

1221. Re: Crystal filters

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 18:20:13 UTC
From: gary@ke4zv.atl.ga.us
Message-ID: <1993Dec31.182013.3142@ke4zv.atl.ga.us>
Source record: 118936

In article <9312311356.AA03715@isd.csc.com> bapplega@isd.CSc.COM (Bob Applegate) writes:
>I'm looking for a source of crystal filters for a superhet receiver I'm
>working on. Rather than matching crystals and building one myself, I'd rather
>just buy one off the shelf. What rigs use 9.0 MHz IFs now? I see that my
>735 has a few near there, but not quite, and I really want to use a filter
>designed for a 9MHz IF.

Spectrum International carries 9 MHz filters, and the necessary crystals.

Gary

--
Gary Coffman KE4ZV | You make it, | gatech!wa4mei!ke4zv!gary
Destructive Testing Systems | we break it. | uunet!rsiatl!ke4zv!gary
534 Shannon Way | Guaranteed! | emory!kd4nc!ke4zv!gary
Lawrenceville, GA 30244 | |

1222. Re: 80 M DSB transceiver project

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 22:17:09 UTC
From: dean@splinter.coe.neu.edu
Message-ID: <DEAN.93Dec31171709@splinter.coe.neu.edu>
Source record: 118939

.

1223. Low Budget CB

Newsgroup: rec.radio.amateur.homebrew
Date: 1993-12-31 22:19:23 UTC
From: dean@splinter.coe.neu.edu
Message-ID: <DEAN.93Dec31171923@splinter.coe.neu.edu>
Source record: 118938

Hi:
I'm in the market for an inexpensive CB to start in this hobby. Anything out there for sale?

-Dean